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CONTENTS

EDITORIALS— Page

The Postgraduate School of Medicine of the University of Texas 485
The Distribution of Physicians in Texas 486
Work on the 1949 Annual Session 487
The Fourth "Grass Roots Conference" 488
The Travis County Medical Society Library 488
The Post Graduate Medical Assembly of South Texas and the American Cancer Society, Texas Division 489
The Nursing Profession 490

ORIGINAL ARTICLES—

Tumor Seminar I.
Colonel J. E. Ash 492
Early Experiences in Clinical Pathology in Texas.
B. F. Stout 500
Major Factors in Reduction of Maternal and Infant Mortality.
Haven Emerson 503
The Minimal Diagnostic Survey for Sterility.
C. C. Boehler 507
Uterotubal Insufflation with Use of the Kymograph.
Eugene R. Chapman 512
Endometrial Dating.
Max Blend 516
Trauma and Interruption of Pregnancy.
A. W. Diddle 520
Management of the Parturient.
Nellins C. Smith 524
Etiology of Eclampsia: Evaluation of Some of the More Recent Theories.
Herman W. Johnson 527
Continuous Caudal Analgesia in Obstetrics.
James C. Klein 532
Cesarean Section.
Charles L. McGehee 536
Some Factors Which Affect Results in Breech Delivery.
Wayne T. Robinson 540
Postpartum Care.
Ralph Luikart 543
Repair of Recurrent Prolapsus Uteri.
D. R. Knapp 547

MISCELLANEOUS—

Coming Meetings and Clinics 549
Texas Pediatric Society 550
Texas Association of Obstetricians and Gynecologists 550
Psychiatrists to Meet in Dallas 551

Library Notes—

Package Service 551
Motion Picture Film Library 551
Book Reviews 552

News 553
Society News 554

Auxiliary Notes—

Auxiliary News 557

Deaths 558

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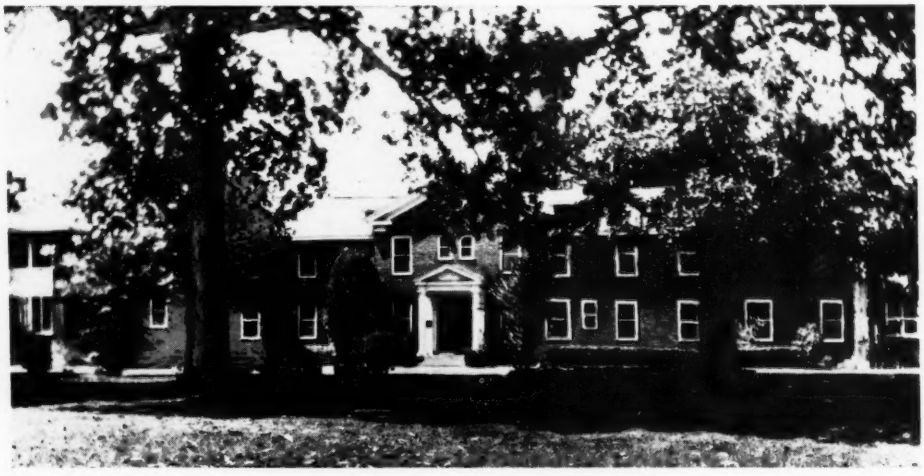

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DEVOTED TO THE INTERESTS OF THE MEDICAL PROFESSION AND PUBLIC HEALTH IN TEXAS

The Postgraduate School of Medicine of The University of Texas became a reality in September when the Board of Regents of the University, in accordance with action of the State Legislature, established such a school as a part of the Texas Medical Center, Houston, and appointed Dr. R. Lee Clark, Jr., Houston, director of the M. D. Anderson Hospital for Cancer Research, as dean and professor of surgery of the new school.

When the Texas Medical Center was conceived, it was agreed among those planning its future that the University of Texas should concentrate its endeavors in Houston at the postgraduate level, while Baylor University College of Medicine would concern itself primarily with the undergraduate teaching program. The postgraduate program of the University of Texas is now being activated in accordance with that early planning. The curriculum and general activities will be coordinated with the University of Texas Medical Branch at Galveston and the Baylor University College of Medicine, but its operations will be entirely independent of either of them and will be controlled directly by the Board of Regents of the University of Texas. It is expected that appropriate postgraduate degrees will be granted for long term work organized on accepted educational practices, and that short refresher courses will also be offered.

Temporarily the Postgraduate School of Medicine will operate as a part of the M. D. Anderson Hospital, another unit of the University of Texas which is a part of the Texas Medical Center. As a matter of fact, some teaching is already under way at the hospital with fellows studying in the basic sciences and in clinical fields. The M. D. Anderson Hospital, the School of Dentistry, and the School of Public Health, all units of the University of Texas in the Texas Medical Center, will contribute to the faculty of the Postgraduate School, and it is expected that other members of the faculty will be drawn from the Medical Branch at Galveston and from other cooperating units of the Texas Medical Center which have had no previous affiliation with the University of Texas.

The dean of the new school, Dr. Clark, is a native Texan with a wide background of experience in medicine. A graduate of the Medical College of Virginia, he spent a year in France, five years at the Mayo Clinic, a period in Jackson, Miss., during which he was instrumental in securing the establishment of a four-year medical school by the state, and a term in military service before coming to Houston in 1946 as director and surgeon-in-chief of the M. D. Anderson Hospital.

While plans in Houston for a new Postgraduate School of Medicine are coming out of the paper stage, the University of Texas Medical Branch in Galveston is already carrying on important postgraduate work for the physicians of the state.

With Dr. Truman G. Blocker, Jr., as director of the Postgraduate Division, the University of Texas Medical Branch offers a

number of activities on the graduate and postgraduate level designed to fit the needs of various types of doctors. Approved residencies in fifteen specialties offer clinical experience and appropriate foundation in preclinical branches essential to each specialty. Special preclinical training needed for specialty certification is available not only to residents in the hospitals associated with the Medical Branch but to residents in other Texas hospitals which have no medical school affiliation. Externships in limited fields or covering the whole field of medicine are also available.

Short refresher courses for practicing physicians are scheduled throughout the year. Among the courses yet to be held this year are those in physical medicine (March 1-5), obstetrics (March 21-26), pediatrics (April 11-16), and tumors (May 4-7).

Physicians are also always welcomed at formal classes, clinics, ward rounds, staff meetings, conferences, and seminars, many of which are held regularly each week.

An additional service to bring up-to-date information concerning medical progress to practicing physicians can be arranged through the Postgraduate Division of the Medical Branch. Speakers for single meetings or sessions lasting several days will be provided for medical societies or other groups of physicians, usually upon subjects requested by the groups.

The picture for postgraduate medical education in Texas is bright. The establishment of a new Postgraduate School of Medicine as a part of the Texas Medical Center in Houston, which will cooperate with the Medical Branch in Galveston in enlarging and broadening the medical education already available on the postgraduate level in addition to those facilities available through the other two medical schools of the state, Baylor University College of Medicine, Houston, and Southwestern Medical College, Dallas, means that Texas physicians can stay in Texas and secure the finest training they could expect at any other medical center.

The Distribution of Physicians in Texas represents a problem of medical economics for the population of this state and is considered characteristic of the nation as a whole as it relates to the provision of medical services for small communities and rural areas.

Since the close of World War II the work of "Procurement and Assignment" has been carried on as a "placement service" for physicians by the staff of the central office. The principal objective of this service is to assist in distributing information concerning communities in which there is a need for a physician or additional medical and technical assistance.

During the past year it has become increasingly apparent that a shortage of medical doctors exists for the population of most states; requests for physicians have been received from 101 places in Texas alone. Not all of these requests are from isolated or rural areas. During the last six months 19 requests have been satisfactorily filled through information provided by various county medical society officers, which was in turn referred to those who had requested location opportunities in Texas.

As of this date the "location map," which is kept in the central office, seems to indicate that the need for doctors is not characteristic of any specific area and that location opportunities are scattered over the state as a whole. Some urgent requests have been received from a few areas in which the population is thin and widely scattered. Requests from all locations tend to place emphasis upon the need of obtaining the services of well-trained, experienced doctors of medicine. The majority of the requests have been for the services of a general practitioner. A few instances are noted in which specialists in certain fields of medicine are needed in communities, but most of these are from associated clinical groups.

The need for a physician in each of the communities listed by the location service has been verified through county medical societies, and physicians wishing to change their locations are referred to those opportunities which are known to exist by the Council on Medical Economics of the State Medical Association. Undoubtedly there are many towns or communities which are in need of a physician that have not made their wants known to the Association officially.

Within the past year correspondence has been received from physicians in almost every state of the union and several foreign countries, all of whom were seeking information concerning location opportunities for the practice of medicine in Texas. Some of these inquiries have come from as far as Liberia in West Africa, and include those received from Canada and Central and South America. The largest number of inquiries received from areas outside of the state have come from the north central and the extreme eastern parts of the United States. The number

of inquiries from these areas over the nation seems to confirm the migratory trend of population to the south, especially the southwest. It is of interest to note that the movement of physicians across the nation seems to follow closely the program of increased industrialization of the south, particularly as it relates to Texas.

As of November 1, 1948, records indicate that 114 physicians who had made inquiry of the placement service had not selected a permanent location in which to practice medicine. Of this number 32 are already located on a temporary basis in this state.

The adequate distribution of medical services in Texas is dependent upon a multitude of factors which are well known to all physicians. The importance of medical facilities such as hospitals, laboratories, nurses, technicians, and medical supplies, not to mention the distribution of population, highways, and other transportation facilities, is often misunderstood by lay members of those communities who have requested assistance in securing the services of a physician.

These factors, responsible for the poor distribution of medical care, form the basis of many of the major problems confronting the medical profession of this and most other states, and are so closely related to the welfare of family and community life that they may be expected to play no small part in determining the trends of society and government in this nation. The Council on Medical Economics suggests that continued efforts toward the solution of the problem of providing medical care to the people of all areas should be constantly emphasized. Much assistance toward this goal can be provided through the use of up-to-date information on location opportunities for physicians, a continued program of interpretation for the public concerning the requirements to be faced in securing adequate medical care in any community, and the understanding on the part of doctors of the state of the objectives of a community in its request for the cooperation of the medical profession in meeting medical needs.

Work on the 1949 Annual Session is going forward in every area, and the pattern which the session will take is beginning to take shape. As announced previously, the event will take place in San Antonio, May 2-5.

Several conferences between the local committees under the leadership of Dr. J. L. Cochran and others responsible for working out the details, including Dr. May Owen, Fort Worth, chairman of the Council on Scientific Work; Dr. Tate Miller, Dallas, President of the Association; and Dr. Harold Williams, Austin, Secretary, have resulted in tentative decisions concerning the places of meetings, exhibits, and other activities.

The increasing size of the Association and the multitude of activities which are a part of the annual session have made it impossible to designate a single headquarters for the 1949 meeting. General meetings, technical and scientific exhibits, meetings of three scientific sections, and registration on Tuesday, Wednesday, and Thursday will be housed in the Municipal Auditorium. Meetings of the House of Delegates and registration on Sunday afternoon and Monday will be held at the Gunter Hotel. Meetings of special societies on Monday, section meetings other than those in the Auditorium, clinical luncheons, and other activities will be divided among the Gunter, St. Anthony, and Plaza Hotels. Sessions of the Woman's Auxiliary will be centered in the Menger Hotel. An effort is being made to concentrate insofar as possible activities of all kinds relating to a particular field within a single building or small area for the convenience of visitors. When these plans are complete, it will be possible to suggest the hotel which will be most convenient for physicians of a specific interest.

While meeting places, registration details, and other arrangements such as how hotel reservations can be handled most expeditiously are being planned by the San Antonio physicians and their official advisers from the Association as a whole, members of the Council on Scientific Work, especially officers of the nine sections, are busily engaged in formulating a scientific program which will be well rounded and helpful. The President has extended invitations to a number of outstanding physicians from throughout the nation to participate on the general meeting and section programs, and gradually the list of guests is nearing completion. The section officers are still requesting submission of papers from members of the Association for consideration, and the section programs will not be closed until January.

Scientific exhibit space has been plotted, and Dr. X. R. Hyde, Fort Worth, chairman of the Committee on Scientific Exhibits, is ready to accept applications from physicians or medical institutions desiring to present displays during the session. Technical ex-

hibit arrangements are also being completed through the central office.

It is anticipated that more specific information regarding meeting places, hotel reservations, and other items of interest to members of the Association can be published in the next issue of the JOURNAL. Meanwhile, contributions to the scientific program and exhibits will be welcome.

The Fourth "Grass Roots Conference," officially designated as the National Conference of County Medical Society Officers, will be an important part of the interim session of the American Medical Association, to be held in St. Louis, November 30-December 3.

Scheduled for the evening of November 30, the conference of county officers will consist primarily of two panels: (1) "Relation of the Doctor to National Preparedness," including presentation of the viewpoint of the armed services and of the medical profession; and (2) "The Public, the Doctor, and 'Socialized Medicine,'" including discussion of the implications of the National Health Assembly and the Ewing report, facts from the Brookings Institution report, and results of European experiences. The panel discussions will be open to all physicians in attendance at the interim session, and opportunity will be given for questions from the floor.

Tentative plans for the scientific program of the interim session, which will begin the afternoon of November 30 and extend through the morning of December 3, call for an hour of lectures each morning and afternoon on subjects of particular appeal to general practitioners, followed by an intermission at which scientific and technical exhibits can be viewed, and then by clinical presentations in a variety of fields. Two Texans have been asked to deliver lectures in the general assemblies: Dr. Everett Fox, Dallas, will speak on common skin diseases and Dr. George R. Herrmann, Galveston, on the heart.

The House of Delegates will meet during the period of the interim session. Immediately preceding the session a national conference on medical public relations will be held on November 27 and a conference of state secretaries and editors on November 28-29.

With the numerous meetings emphasizing different areas of importance to the medical profession, the series of St. Louis conferences will be of interest to each member of the American Medical Association. Most physicians will find the scientific program of the interim session proper and the county medical society officers' conference especially appealing.

Registration for the interim session will be limited to fellows of the American Medical Association. However, any member of a county medical society can become a fellow by presenting his state medical association membership card and paying the sum of $12, which in addition to fellowship entitles him to receive *The Journal of the American Medical Association* or another of the several publications of the Association.

The Travis County Medical Society Library has been donated to the Library of the State Medical Association, and the books and journals which the Austin doctors have been assembling for their use will become a part of the Association collection and thus available to any physician in the state.

When the Capital National Bank Building was erected in Austin as the Norwood Building, about 1930, it was designed primarily as a medical arts building, and the owners made available to the physicians of the county an auditorium for meetings and a room for a library. The journal and book collection was built up gradually through appropriations from the medical society and through gifts from individual physicians and their families. Early in the war years, however, office space was at a premium and it became necessary to relinquish the auditorium and library space. The library materials were moved to the basement of the Austin Public Library, where they have been ever since.

Following the removal of the central offices and Library of the State Medical Association to Austin this year, the Travis County Medical Society voted to give its library to the Association to be assimilated in the larger collection. In addition to the medical literature, a desk and chair and a typewriter were included in the transfer. The donation from the Travis County doctors has been accepted by the Board of Trustees for the State Medical Association, and the materials will be moved from the Public Library building into the Association headquarters building at 700 Guadalupe Street as rapidly as they can be catalogued and placed.

Donation of the Travis County Medical Library to the Library of the State Medical Association is a fine gesture of cooperation from the new "host society" of the medical profession of Texas. In allowing its collection to become a part of the Library of the State Medical Association, the Travis County Medical Society realizes that by this means

the materials can be used more effectively not only by the physicians in and near Austin, but also by physicians far removed from the capital city.

Contributions to the Library of the State Medical Association have also been made recently by two physicians. Dr. Karl John Karnaky, Houston, who has previously donated a number of motion picture films on gynecologic subjects to the Film Library, has contributed $200 for use in making new prints of his films as the old prints wear out. Dr. Henry L. Hilgartner, Austin, has contributed to the Library's journal collection, giving bound volumes from 1926 through 1944 and unbound volumes from 1945 through 1947 of *Archives of Physical Therapy*, and bound volumes for 1924 and 1925 of the *Journal of Radiology*.

Each member of the State Medical Association of Texas should be grateful to the Travis County Medical Society and Drs. Karnaky and Hilgartner for their generosity. Perhaps appreciation can be expressed in a measure through a wider use of the Library by physicians of the state. Incorporation of the new materials into the present Library will make possible a more complete service, and the Library staff will welcome inquiries about the services which it can provide.

The Post Graduate Medical Assembly of South Texas and the American Cancer Society, Texas Division, will again combine forces for five days of intensive study in the advances medicine has made recently in a variety of fields. The Cancer Society program will be held in Houston on December 5-6, immediately preceding the fourteenth annual meeting of the Post Graduate Assembly, December 7-9.

The Post Graduate Medical Assembly of South Texas brings the complete scientific program, medical motion pictures, scientific and technical exhibits, and dinners to one central location, the Music Hall and Sam Houston Coliseum. This arrangement has proved a saving in time and energy for visitors.

The distinguished speakers who have agreed to participate in the assembly meeting include:

DR. FRANK E. ADAIR, Attending Surgeon, Memorial Hospital, New York.

DR. ALSON EMMONS BRALEY, Associate Attending Ophthalmologist, Presbyterian Hospital, New York.

DR. A. I. DODSON, Professor of Urology, Medical College of Virginia, Richmond.

DR. R. H. FREYBERG, Director, Department of Internal Medicine, Hospital for Special Surgery, New York.

DR. FRANCIS C. GRANT, Professor of Neurosurgery, University of Pennsylvania School of Medicine, Philadelphia.

DR. T. DUCKETT JONES, Medical Director of Helen Hay Whitney Foundation, New York.

DR. ROGER L. J. KENNEDY, Professor of Pediatrics, Mayo Foundation, Rochester, Minn.

DR. ROBERT KIMBROUGH, Associate Professor of Obstetrics and Gynecology, University of Pennsylvania School of Medicine, Philadelphia.

DR. CLIFFORD B. LULL, Director, Division of Obstetrics and Gynecology, Philadelphia Lying-In Unit of Pennsylvania Hospital, Philadelphia.

DR. R. TOWNLEY PATON, Surgical Director, Manhattan Eye and Ear Hospital, New York.

DR. LEROY ALLEN SCHALL, Professor of Laryngology and Lecompte Professor of Otology, Harvard Medical School, Boston.

DR. THEO. E. WALSH, Professor and Head of Department of Otolaryngology, Washington University School of Medicine, St. Louis.

DR. JOHN M. WAUGH, Associate Professor of General Surgery, Mayo Foundation, Rochester, Minn.

DR. ALLEN O. WHIPPLE, Valentine Mott Professor of Surgery Emeritus, College of Physicians and Surgeons, Columbia University, New York.

DR. PHILIP D. WILSON, Surgeon-in-Chief, Hospital for Special Surgery, New York.

The registration fee of $15 covers the entire scientific and entertainment program. Officials of the assembly suggest that registration be attended to in advance by sending a check to the Secretary, 229 Medical Arts Building, Houston 2. A statement of the registrant's specialty is also requested. Hotel accommodations should be reserved directly with the hotel of choice.

The third annual meeting of the American Cancer Society, Texas Division, December 5-6, will be open to physicians, dentists, and nurses in Texas. There will be no registration fee, according to J. Louis Neff, executive director of the Texas Division.

A highlight of the program will be a tumor clinic at the Naval Hospital under the combined auspices of the M. D. Anderson Hospital for Cancer Research and the staffs of the nine other clinics in Texas which are being assisted by the American Cancer Society. Patients will be presented for discussion by representatives of the clinics and by distinguished guests.

Sessions on December 6 will feature papers by representatives of the three medical schools of the state and of the M. D. Anderson Hospital, and a series of medical papers on the general theme "The Practicing Physician of the Cancer Program." Drs. G. V. Brindley, Temple; R. Lee Clark, Houston; Willard R. Cooke, Galveston; Francis C. Grant, University of Pennsylvania School of Medicine, Philadelphia; John M. Waugh, Mayo Foundation, Rochester, Minn.; and Allen O. Whipple, Memorial Hospital, New York, will participate in the latter series.

The annual banquet of the Texas Division

will be held the evening of December 5 with Col. Ike Ashburn, Austin, as toastmaster.

Physicians of the region will find that the combination of the American Cancer Society, Texas Division program and the Post Graduate Assembly program will provide almost a week of scientific review under excellent teachers plus much pleasant fellowship and entertainment. Such a combination is worth including in their calendars.

The Nursing Profession* of this country has for a number of years been coping with the tremendous problems which confront this profession, chief among which is the shortage of nurses needed to administer to the sick and aid in the promotion of health of the people. In the hospitals of the country and various other institutions requiring the aid of nurses plus public health agencies operated by private organizations or by government groups this nursing shortage has been particularly felt. A related problem has been the difficulty encountered in obtaining sufficient recruits for the nursing schools to meet the demands. Various means have been devised to assist in the solution of these problems. At the same time the graduate nurses have been striving to improve the standards of their profession.

Realizing these problems and the need for some concerted effort to solve them, the American Medical Association, through action of its House of Delegates at the annual session in Atlantic City in 1947, appointed a committee to study the nursing problem of the United States. At the annual session in Chicago this year the committee reported to the House of Delegates its findings and recommendations. In the report it was estimated that about 400,000 nurses will be required to care for the American people in 1949, and it was thought that this could be accomplished. The number of students admitted to training schools increased from approximately 38,000 in 1940 to 67,000 in 1944, but dropped a little under 31,000 in 1946. This indicates that immediately after the war there was a drop of about 50 per cent, which may be explained on the basis of patriotism or stipend, probably the former. The report pointed out also that labor statistics indicated that about 550,000 nurses will be needed in 1960. To accomplish this end, about 50,000 must be graduated each year between 1951 and 1960, but by the cooperation of all concerned this also can be achieved.

The problem was studied by the committee under three headings: (1) immediate relief; (2) proposed training for all grades of nurses in the future; and (3) the economic situation. Various recommendations, which were approved by the House, were made under the three general headings. First, it was recommended that retired nurses, including married nurses, be requested to fill in during the emergency. A great deal of publicity has been given this subject through various medical journals and *Hygeia* and with the generous cooperation of the American Broadcasting Company and National Advertising Council. It has also been recommended that personnel be trained on the job and used to supplement nursing services, and that hospital administrators be requested to use nurses only in nursing duties, assigning other work to auxiliary personnel. These recommendations are being carried out, and the Hospital Career Campaign for the recruitment of student nurses gives promise of an increased student nurse enrollment.

Under the second heading, which relates to the proposed training of all grades of nurses in the future, the committee recommended that nurses be classified as (1) Professional Nurses with subdivisions of (a) nurse educators and (b) clinical nurses, and (2) the Trained Practical Nurse. Nurse educators were defined as those with collegiate training and others who have shown an aptitude for teaching, administration, and supervisory positions. The clinical nurse is to be comparable to the general duty or private duty nurse, and it was recommended that for this group training should be reduced to two years and that selected clinical nurses with an aptitude and ability for teaching be considered for some of the subordinate teaching positions. It was pointed out by the committee that the term "practical nurse" bears the implication of no training but since the term has already been written into the statutes of several states, changing of the name would be difficult. It was thought important that the word "trained" be emphasized and that uniform standards of training and duty should be established across the country. The trained practical nurse is one who has received both theoretical and practical training, and it was recommended that there be at least one year of training made up of three months of theoretical and nine months of practical training. The committee felt that this group of

*EDITOR'S NOTE: This is the third of a series of articles on the Transactions of the House of Delegates of the American Medical Association and activities of the various councils, committees, and bureaus of the A.M.A. which are destined to exert an influence on the practice of medicine and the improvement of the public health of this nation.

trained practical nurses, under proper supervision of professional nurses and medical staff, should be able to do much of the routine bedside nursing now being done by the professional nurses; that the more delicate and intricate duties must be left to the professional nurse.

The committee was cognizant of the fact that certain economic problems confront the nursing profession and urged that steps be taken to provide social security and retirement plans for all nurses. It also recommended that hospitals adopt a definite personnel policy for all institutional nurses with a view toward making salaries, hours, sick leave, and vacation comparable to other fields of endeavor for women with equivalent training. It was further recommended that the cost of essential special nursing care to the patient be covered by prepayment nursing plans, or be tied into prepayment hospital and medical plans if practicable.

The committee felt that it was unwise for a group of nurses to set themselves up as bargaining agents as their national organization had voted to do, pointing out that they are members of a noble profession, they do not need bargaining agents, and that "medical men, nurses, and other hospital employees have not the right to strike anywhere, anytime." It was hoped that the nurses would correct their stand in the near future.

In the report it was pointed out that a permanent conference committee made up of representatives of the American Nursing Association and other nurse organizations, the American Hospital Association, and the American Medical Association has been formed. It is the duty of this committee to study the problem common to all. The A.M.A. committee in making its study and deciding upon the recommendations presented had frequent conferences with representatives of each of these groups and, in addition, with the American College of Physicians and the American College of Surgeons.

The Texas Graduate Nurses Association is anxious to do something about the nursing problems which confront this state and is sponsoring for introduction in the State Legislature a bill entitled "An act defining and permitting the licensing of licensed nursing attendants; fees for such license and provisions for their collection; granting additional duties to the present State Board of Nurse Examiners for the registration of professional nurses; providing procedure for the penalties, revocation of licenses of Licensed Nursing Attendants."

In this bill the term "licensed nursing attendant" is defined to be a person licensed by the Texas State Board of Nurse Examiners to "practice nursing," which means the performing for compensation or personal profit services required in the nursing care of the sick, not involving the specialized education, knowledge, and skill required in professional nurses. It requires further that in order for a person to be licensed as a licensed nursing attendant she must have reached the age of 19 and be not more than 55; be of good moral character; be in good physical and mental health; and show evidence of this fact through an affidavit made by a physician on forms provided by the Board; have at least an eighth grade education or its equivalent and such other preliminary qualifications that the Board may from time to time prescribe; be a citizen of the United States, or have declared her intention of becoming a citizen; have completed an accredited course of not less than nine months in a school for training licensed attendants or practical nurses, except that the Board of Nurse Examiners shall have the authority to issue a certificate to practice as a licensed nursing attendant without examination, provided she can show proof that she has been "practicing nursing" for at least one year, under a licensed physician or a director of nursing service. This waiver is to be in effect for one year after the passage of the act.

Whether those who practice nursing and are not qualified through sufficient training to be registered as graduate nurses should be called licensed nursing attendants or trained practical nurses as advocated by the A.M.A. committee, there seems to be a distinct need for some type of assistance, particularly in hospitals and other institutions requiring the services of nurses. It seems a commendable move on the part of the nursing profession of Texas to attempt to provide for such assistance through training and licensing for the protection of all concerned, particularly the nursing and medical professions and the public which they serve.

ARTHRITIS TO BE STUDIED

One out of every 20 Americans—more than 7,000,000 persons—is a victim of arthritis or some other form of rheumatism, according to the Arthritis and Rheumatism Foundation. Furthermore, less than 200 free beds in the nation's hospitals are specifically allocated to the study and treatment of rheumatic diseases. The foundation, in cooperation with the National Research Council, is planning a research program to find the cause and cure of rheumatic disease. Contributions for this project will be welcomed by the foundation, 535 Fifth Avenue, New York 17.

ORIGINAL ARTICLES

TUMOR SEMINAR I

Conducted by

COLONEL J. E. ASH, U. S. A., RET.
Scientific Director, The American Registry of Pathology
WASHINGTON, D. C.

Dr. B. F. Stout, San Antonio, Chairman: We are pleased to see again so many who attended our previous seminars, of which this is the fourth. You will recall that the first two were conducted by Dr. Arthur Purdy Stout, New York, and the third by Dr. Emil Novak, Baltimore.

We owe a tremendous debt of gratitude to the Army. All but 3 cases have been furnished by either Col. Elbert DeCoursey and his officers from Brooke General Hospital or by our guest speaker from the Army Institute of Pathology.

What success we have is due to teamwork. I want also to thank publicly the board of directors of the Medical and Surgical Hospital of San Antonio for permitting us, for the third time, the use of this meeting room and the lunch room; Dr. A. O. Severance for his work in assembling these tables and getting things ready for us; Dr. J. M. Moore and Dr. S. W. Bohls for taking over the hotel reservations and transportation; and Dr. David A. Todd for arranging for our dinner tonight.

Now I should like to introduce Col. Elbert DeCoursey, chief of Laboratory Service, Brooke General Hospital, who will in turn introduce the guest speaker.

Colonel DeCoursey: We in the Army are delighted with our association with the doctors of San Antonio and are delighted to be members of the San Antonio Society of Pathologists.

It is a real pleasure to introduce our speaker. Starting with about four registries of pathology that have become widely known, he has built up at the Army Institute of Pathology fifteen registries of specialized pathology, each sponsored by a national medical organization. I think Dr. Baldwin Lucké has said many times, and well, that no other medical officer of the Army has known so many civilian pathologists and their need of having a central place to send material and to study that collection at any time. There are now about three or four registries of pathology in the making, covering endocrinology, the cardiovascular system, nutrition, and perhaps others, that Colonel Ash has almost completed.

As director of the Army Medical Museum at the beginning of the war, he realized that unless some system was organized much material would be lost. He perfected a plan that started specimens on the way to the Museum from the farthest places, where there was not even a pathologist but someone who did autopsies. He set up consultative histopathologic centers to which the gross material was sent to be studied microscopically. In each theater overseas there was still another direct representative of the Army Medical Museum (now the Army Institute of Pathology), namely, a general laboratory where the material was reviewed and then sent to the Museum. In this country the pathologist in every Army hospital has his work reviewed; he is not the last word. The fact is, Colonel Ash has arranged that the Army Institute of Pathology is not the last word either; in problem cases the material is sent to a board of consultants. Outstanding pathologists of the country coming to the Army Institute of Pathology for a month or two and serving on the board of consultants have also been a great advantage to a centralized national Institute of Pathology, which has culminated under his directorship. The November, 1946, number of the *Military Surgeon* with outstanding articles by his associates was dedicated to Col. J. E. Ash, whom I am happy to present today as our speaker.

Colonel Ash: It is a distinct honor for me to be asked down from Washington to this great state to talk to you. One of the privileges that have been mine during my long tour of duty at the Institute has been the intimate association with its registry activity that has given me contact with the clinical specialties. Of necessity I have had to learn a little about the eye, a little about bones, and even a little about the skin. When Colonel DeCoursey was at the Institute I did not have to know anything about eyes because he was doing that chore so well, but the exigencies of the service dragged him away and left me holding a lap full of eyes. We were receiving at that time over a hundred eyes a month, and that makes quite a job technically and professionally. So of necessity I had to learn about eyes. The same is equally true of skin pathology.

One of the first things I realized in my

The preparation of this material was financed in part by a grant to the American Registry of Pathology by the American Cancer Society.

EDITOR'S NOTE: The tumor seminar conducted by Colonel Ash in San Antonio on October 4, 1947, was the fourth such annual conference sponsored by San Antonio and Brooke General Hospital pathologists, who with Colonel Ash supplied most of the material for study. Pathologists from throughout Texas attended the seminar and were furnished a history and slides for the cases under consideration. Colonel Ash commented on each tumor and discussed additional pertinent material.

The report of the seminar is being published in two parts and will be completed in the December issue of the JOURNAL. The material will be available in its entirety in reprint form.

early contacts with dermatologists was that I had to learn a new language. That is something which you pathologists will have to do, also, if you expect to make much headway in your knowledge of dermatology. Another early realization was that much of the dermatologic pathology has been developed by the clinical specialists, a situation which has made it a little difficult for the general pathologist and the dermatologist to understand one another thoroughly. Numbers of skin diseases have been identified and named on the basis of clinical observations. It is only comparatively recently that dermatologic pathology has become specialized, and in the past the clinical approach has added a great deal of confusion to the application of pathology to skin diseases.

It is necessary that pathologists appreciate that point of view if they want to make much headway with their clinical colleagues. The dermatologists have their fixations, as a result of these empiric concepts that have come down through the years, and it is difficult to break them off suddenly and persuade them to think in terms of pathology. If the pathologist says, "That is just a pigmented mole," the clinical dermatologist is not satisfied. He wants it to be a nevus pigmentosus dexter, or nevus pigmentosus sinister, and if you do not understand Latin any better than I do, you will be confused. Even from the pathologic standpoint some orientation in the nomenclature is necessary for the general pathologist, and if you will bear with me, I will be just a little basic at the start.

The skin is a well organized organ both anatomically and physiologically, and it affords the dermatologist a great advantage in the study of his specialty because it is out in the open. As you remember, it is made up of an outer layer of epithelial tissue, the epidermis, and the underlying mesenchymal tissues, the dermis, and subcutaneous tissue. One confusion that I have noticed among general pathologists is that they are not sure which are the papillae and which are rete pegs. The processes that dip down from the epithelium are rete pegs and the upward projections from the dermis are the papillae. This papillary layer is an important feature of the dermis both physiologically and pathologically.

The dermis may be divided into two rather definite layers, the papillary layer, which has a sensitive vascular system, and the deeper collagenous layer. Each of the two layers is subject to specific diseases. Remembering the difference between their histology and physiology may make it clearer why in lichen planus, for instance, the exudate is so definitely limited to the papillary layer, and in pseudoxanthoma elasticum the process is in the deeper portion of the dermis.

The epidermis has a basal layer, a prickle cell layer, the specialized granular layer, and finally the surface cornified layer. From the basal cell there is a slow, orderly maturation to the malpighian or prickle cell layer and from then on there is a slow retrogression. In the granular layer there is an accumulation of keratohyalin material which, under the microscope, appears as black granules. From there on the cells lose not only the granules but also their nuclei to become a flat layer of keratinous material. In each of these layers there are pathologic changes which will be mentioned so as to get the nomenclature straight.

There are two essential changes that may take place in the outer keratin layer. It may become greatly exaggerated, resulting in hyperkeratosis. Sometimes there is some disorderly retrogression of these mature cells, and instead of the accumulation of keratohyalin in the cells of the granular layer, there is a retention of the nucleus which becomes more and more pyknotic. The keratinizing cell changes its shape but still retains its nuclear material, and this the dermatopathologist calls a parakeratosis. Those two types of retrogression of the epithelium have significance in certain conditions. In psoriasis, for instance, parakeratosis is the feature, while in lichen planus it is usually keratosis. In some of the dyskeratoses, like molluscum contagiosum, there is a variation in this parakeratosis so that the end result gives a typical picture from which it is possible to make a definite diagnosis.

In the deeper epithelial layers there may be pathologic changes. The basal cells may not produce as many mature cells as normal and there will be atrophy. The prickle cell layer will be extremely narrow or even entirely absent. In other instances there is a great expansion in this prickle layer, which is called acanthosis. Acanthosis is a feature in a number of dermatoses, for example epitheliomatous hyperplasias and the verrucae, diseases in which the malpighian layer is greatly increased in thickness although the individual cells may be perfectly typical. There also are changes limited to the basal layer. Instead of development in an orderly fashion from the basal cell to the prickle cell there may be no differentiation, and the lesion will consist largely of basal cells, as seen in seborrheic keratosis, or there may be disturbance of the normal process of keratinization evident in all layers, as in leukoplakia.

Any disturbance in the orderly pattern of maturation is dyskeratosis. This is of two types depending on its clinical outcome: (1) benign dyskeratosis, such as molluscum contagiosum, Darier's disease (fig. 1), acanthosis nigricans, and pseudoepitheliomatous hyperplasia, all disturbances of normal maturation of the epithelium which remain under control and do not become malignant; and (2) the malignant dyskeratoses or the so-called precancerous dermatoses such as leukoplakia, senile keratosis, arsenical and x-ray keratoses, and Bowen's disease, all types of alteration of maturation and keratinization which commonly do (as in leukoplakia and senile keratosis) but may not (as in Bowen's disease) lead to malignant disease.

I do not want to appear too didactic or dictatorial, but it has been my experience that sessions like this do not get far if there is too much discussion. I do not ask you to believe or accept anything or everything I say, but if you do not believe me, write me later. If there are legitimate questions, I will attempt to answer them, and they might well serve a good purpose in clarifying the points I fail to make clear.

Now let us examine the slides.

SEBORRHEIC KERATOSIS

CASE 1.—Presented by Col. Elbert DeCoursey, Brooke General Hospital, Fort Sam Houston.

Specimen.—Lateral aspect of the back.

History.—L. D. L., a white man aged 52, stated that the lesions had been present for many years. They consisted of brown, flat-topped, papular elevations which were circumscribed and covered with a few greasy scales.

Diagnosis.—Seborrheic keratosis.

Colonel Ash: Does anyone have any objection to the diagnosis of seborrheic keratosis? You will remember the other name for this—verruca senilis. Some have much difficulty in differentiating between the terms seborrheic keratosis and senile keratosis. The connotations are important because the former is a benign lesion while the latter is "precancerous."

The specimen shows typical large keratin cysts. The section includes a large follicle filled with keratin opening on the surface. It shows a slight inflammatory reaction with less pigment than usual. There is a tendency to squamous differentiation. The section is cut tangentially (fig. 2).

ADENOMA SEBACEUM

CASE 2.—Presented by Colonel Ash.

History.—A white man aged 58 received the clinical diagnosis of epithelioma of the face. A small lesion below the inner canthus of the right eye had been present for a year. There was a slight increase in size and occasional bleeding. The lesion was diagnosed by the contributing pathologist as basosquamous cell carcinoma.

Diagnoses.—Carcinoma; adenoma sebaceum.

Colonel Ash: I will accept the diagnosis of adenoma sebaceum.

The specimen shows hyperkeratosis of follicular openings and prominent sebaceous glands. There is marked acanthosis of one small group of follicles, a condition properly called follicular keratosis, not, however, to be confused with Darier's disease, which unfortunately is also called follicular keratosis. The basal cell layer is thickened. There is no dyskeratosis, but an occasional mitotic figure. The surrounding area shows a chronic inflammatory reaction and vascular dilatation.

SEBACEOUS ADENOMA

CASE 3.—Presented by Colonel Ash.

History.—The patient, a white man aged 25, for the past four years had noticed a small, painless growth on the forehead. It bled profusely when picked.

Diagnoses.—Adenoacanthoma; pseudo-epithelioma; sebaceous adenoma; Bowen's disease.

Colonel Ash: This is sebaceous adenoma with follicular acanthosis. Moderate elastosis and collagenous degeneration of the upper dermis and additional criteria of "senile" skin are present. There are hyperkeratosis in the follicles and Demodex folliculorum in some sections. The sebaceous glands are prominent, and a moderate vascular dilatation is observed. The surface epithelium has areas of parakeratosis. A moderate chronic inflammatory reaction surrounds the acanthotic follicle.

BOWEN'S DISEASE

CASE 4.—Presented by Lt. Col. G. J. Matt, Brooke General Hospital, Fort Sam Houston.

Specimen.—Skin, left thumb.

History.—A white man aged 57 had a mole on his thumb for many years. It had increased in size with scaliness and induration of surrounding tissues, but there was no pain or tenderness.

Diagnoses.—Carcinoma in situ; molluscum contagiosum; Bowen's disease.

Colonel Ash: This is a good example of Bowen's disease.

The specimen shows irregular hyperplasia of the rete pegs. There is excess keratosis and parakeratosis with considerable variation in nuclear type in the malpighian cells, and additional evidence of dyskeratosis. Many vacuolated Bowen's cells and mitotic figures are scattered through the malpighian layer. Congestion and inflammatory reaction appear in the papillary layer. There is no frank malignancy.

DYSKERATOSES

Colonel Ash: I want to amplify the discussion on the dyskeratoses. It has been possible to put into the set of slides available to each pathologist here examples of the individual items but not all of the examples of diseases in each category. With Colonel DeCoursey's help I shall show additional histologic slides and augment these with lantern slides especially of clinical pictures.

Sebaceous Gland Reaction.—In the discussion of the sebaceous adenoma, I want to include a review of the types of sebaceous gland reaction because they give the general pathologist trouble at times. It helps to remember that the squamous epithelium dipping down into the follicle may undergo the same changes as that of the surface, acanthosis, dyskeratosis, and so forth.

The clinical term sebaceous adenoma is not correct because the lesion is not a tumor of sebaceous gland but a hypertrophy. It is one of the senile changes of the skin. It is

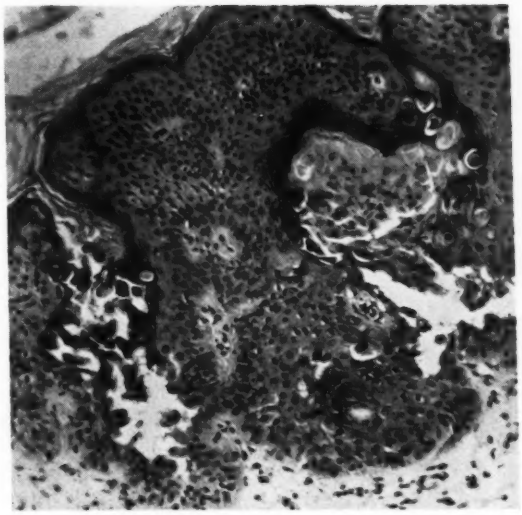

FIG. 1. Darier's disease. Follicular keratosis, corps rond, grains, and lacunae. X 172.

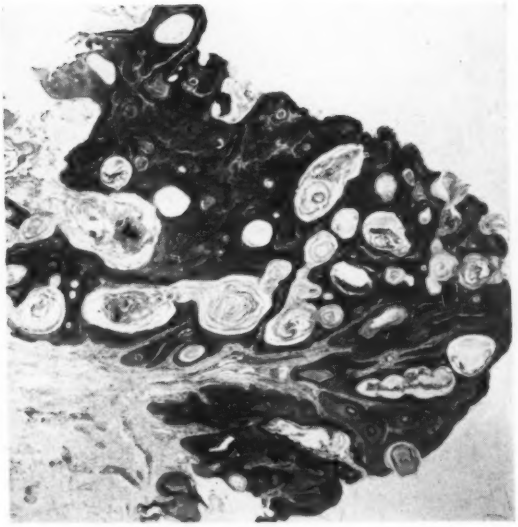

FIG. 2. Seborrheic keratosis. Basal cell mass containing keratin cysts. "Sits" on dermis. X 8.6.

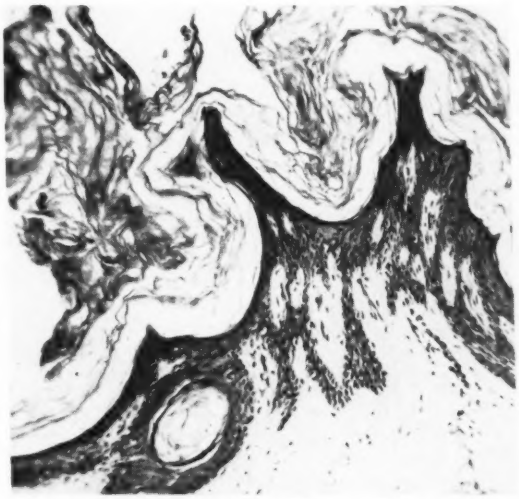

FIG. 3. Acanthosis nigricans. Hyperkeratosis with atrophy of malpighian layer and pigmented basal layer. X 172.

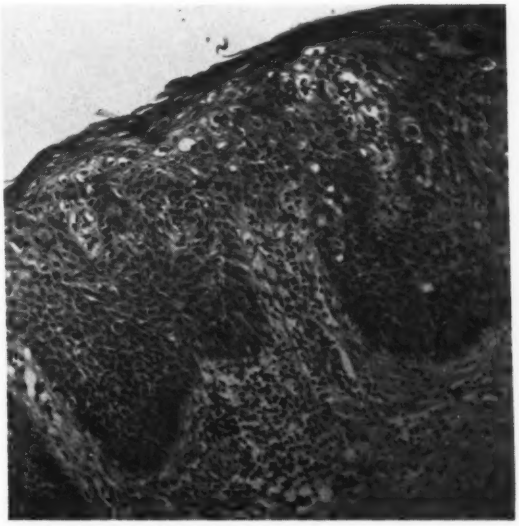

FIG. 4. Erythroplasia of Queyrat. Ectasia of vessels with acanthosis and dyskeratosis. X 98.

common on the upper face, particularly over the forehead. It is the lesion that the old Germans used to call the "linea venerealis" because it was common along the hat-band line over the forehead in Army officers! The slide for case 3 shows definite acanthosis in the follicles. As I have just stated, that acanthopic epithelium may undergo leukoplakic or even actual malignant change. The follicular epithelium is simply an invagination of the surface epithelium.

Rhinophyma.—(Lantern slide.) The extreme example of sebaceous gland hypertrophy is rhinophyma. It is amenable to surgical removal. In a low power view of a mass that has been removed from the nose it can be seen how the dermis is packed with the hypertrophied sebaceous glands. In this condition there may be actual hyperplasia, but the sebaceous gland is such a highly specialized element that the change is predominantly hypertrophy rather than an increase in the number of glands. This condition begins as a rosacea of the skin, called "blue-bottle nose," and the sebaceous gland feature comes later. There is always acanthosis and hyperkeratinization in the follicles, with the accumulation of the keratinous and sebaceous material in which the mite Demodex folliculorum is commonly found. I have never seen malignancy in this lesion.

(Lantern slide.) The next slide shows a still later phase with marked fibrosis of the dermis, where the normal collagenous and elastic elements have been replaced by dense and less well organized connective tissue. The hyperkeratotic follicles are surrounded by chronic inflammatory reaction. The vascular elements which are so prominent in the earlier phases have practically disappeared by this time.

Pseudoepitheliomatous Hyperplasia.—(Micro slide.) In pseudoepitheliomatous hyperplasia there is acanthosis in which can be seen marked hyperplasia and hypertrophy of the malpighian layer and great accentuation of the rete pegs, which penetrate deeply into the underlying corium. Of course there is always much inflammatory reaction because that is the basis for the epithelial change. It is therefore a diagnostic help. This epithelial change is seen particularly in such sluggish inflammations as blastomycosis and chronic ulcers, especially on the legs. It is difficult at times to differentiate from early malignancy. Under high power it is clear, however, that these pegs, as long and hypertrophied as they are, still retain their normal structure—an orderly basal layer and well developed prickle cells. Deep in the corium can be seen tips of pegs cut off and apparently isolated, looking as if they might be invading cancer nests. It is possible by serial sections to determine that these apparently isolated nests of epithelium are still connected with the surface. There may be disconcerting dyskeratosis, and sometimes, as a result of inflammatory reaction, the basal layer of the rapidly growing epithelium may lose its sharp identity. This is particularly true in chronic leg ulcers. In the mouth, particularly in chronic ulcerative gingivitis, the altered epithelium simulates malignancy. Carcinoma not infrequently does develop in the edges of leg ulcers and the picture in the epithelium is often border line, but I know of no sure criterion by which the pathologist can always be certain whether the epithelial change is benign or malignant.

The identification of actual malignant dyskeratosis, bizarre nuclei, atypical mitotic figures, and actual invasion must all be appraised. I hate to use as a criterion of malignancy the presence of simple mitotic figures. In this rapidly growing epithelium a mitotic figure would naturally be found here and there. Mitotic figures which are atypical are something more concrete; little nests of cells which are actually invading masses and have not retained their connection with the surface epithelium give further evidence of frank malignancy. In a certain percentage of cases, in proportion to his experience, the pathologist will be wrong no matter which way he decides.

(Lantern slide.) This is another example of pseudoepitheliomatous hyperplasia. It happens to be on a basis of blastomycosis. Whenever a granulomatous inflammation in the skin with marked epitheliomatous hyperplasia is apparent, blastomycosis must be considered because that is the most common of the deep-seated fungus infections of the skin. When there are micro-abscesses in addition, either in the dermis or in the epidermis, that is additional reason for suspicion. I show it at this point as an example of how bizarre a benign hyperplasia of the epithelium may become.

Seborrheic Keratosis.—(Micro slide.) The next slide (fig. 2) illustrates a few of the features of seborrheic keratosis (verruca senilis). The picture is not always as sharply defined as it is here or in the slide for case 1. The classic criteria for identification of this benign senile change of the skin are (1) hyperplasia of the basal cells and the retention by the cells of their basal character; (2) increase in melanin pigment; and (3) complicated channels of keratin created by the intertwining of the hyperplastic pegs, which in sections appears as isolated keratinous

cysts. This slide is an example of dyskeratosis in which the basal cell apparently jumps right to keratin. Since in some specimens there is an attempt at maturation into the squamous type, the pathologist should not be confused if he sees in the midst of a mass of basal cells a few well developed squamous cells—the lesion is still a senile wart.

These keratinous cysts must be differentiated from the pearls in squamous cell carcinoma by identifying in the latter the maturation of the basal cell through the prickle cell to the parakeratotic or completely keratinized cells in the center of the mass. All material in the cysts of seborrheic keratosis is keratin. Another diagnostic feature is that the lesion sits on top of the skin, definitely elevated above the normal skin level. The diagnosis can often be made from this feature by viewing the slide with the naked eye. Clinically it appears as a raised, verrucal, brown or black, greasy lesion. It may be multiple. One thing of interest is that it has practically the same distribution as does basal cell carcinoma. It is most common on the chest and back and on the upper parts of the face, particularly the temples. It is usually accompanied by other senile changes. When I say senile changes, I speak of them not chronologically but physiologically. There are senile warts in middle life, not as frequently, of course, but they will occur where, because of environmental, hereditary, or other conditions, the skin tends to become senile before the person does. The pathologist will usually have no difficulty in identifying this lesion, but its variations may be confusing. I stress it particularly because we still receive such cases with the diagnosis of basal cell carcinoma. This is an example of the application of clinical nomenclature to pathologic processes. It has nothing to do with the sebaceous glands. This is one type of benign dyskeratosis in which the cells peculiarly retain the basal character.

Molluscum Contagiosum.— (Lantern slide.) This slide is another example of benign dyskeratosis from a 38 year old woman who had the lesions on her right iliac crest. The molluscum is an "open-faced" lesion presenting as an elevated waxy mass with a circumscribed border and a frayed center. The higher power shows better the feature of benign dyskeratosis. In this process there is rather orderly maturation of the cells to a certain point, then comes a disturbance in the keratinizing process. There is a well-defined basal layer which changes abruptly into a squamous cell layer. Toward the surface, coarse dark granules of keratohyalin and eosinophilic droplets appear in the cells. The droplets agglutinate and become homogeneous, eosinophilic bodies that occupy practically the entire cell after the disappearance of the basophilic granules. These are the molluscum bodies, and they are pathognomonic. In the older days they were supposed to represent the etiologic factor, and as a matter of fact such an interpretation has not been abandoned. Some still think these bodies are produced by the growth of the virus in a mucoid menstrum that becomes a solidified mass. Clinically the lesions are usually multiple and are mildly contagious.

(Lantern slide.) In this clinical picture of molluscum can be seen the little elevated pearly bodies presenting through the craters. They are sharply defined and free from inflammatory reaction.

Acanthosis.—(Lantern slide.) The simplest change in the epithelium is the hyperplasia of the malpighian layer with more or less hyperkeratosis. The basal layer is sharply defined; the nuclei may be a little hyperchromatic, but there is no undue proliferation, certainly no bizarre mitotic forms. The cells in this hyperplastic malpighian layer are all well developed. There are prickles between the cells. There is no mitosis and no evidence of premature or disorderly keratosis. There is a sharply defined and accentuated granular layer which is always present when there is hyperkeratosis.

Pathologically, this is a type of acanthosis, but clinically it is called pachydermia and involves the vocal cords. The laryngologists would call this pachydermia laryngis.

Darier's Disease.—(Lantern slide.) This slide shows a clinical picture of Darier's disease. The dermatologists have adopted the term "keratosis follicularis." I do not regard this term with favor, because (1) the keratosis is not confined to the follicles, and (2) there are, as in sebaceous adenoma, other examples of follicular keratosis that are not at all the clinical entity Darier's disease. In the early stage represented by this case, it is obvious that the follicles are particularly involved. There is a certain amount of inflammatory reaction about the more or less isolated papules, which are the result of the hyperkeratotic and dyskeratotic process in the epidermis in and about the follicles (fig. 1).

(Micro slide.) This section is Darier's disease. It is from a man 23 years of age who had had lesions for six months and the clinical picture was typical. It is still in the stage of follicular localization. Even under low power a drastic change in the epithelium is apparent but there is no significant change

in the dermis. At this power also can be seen one of the significant diagnostic criteria: the lacunar formation, resulting from vacuolization in the deeper layers of the epidermis. This dyskeratosis begins almost immediately above the basal layer, but even in the basal layer the cells are not normally uniform. The dyskeratosis consists of vacuolization and granulation of the cytoplasm and the development of two elements which are particularly characteristic of this disease, the corps ronds and the grains. The "corps ronds" are the cells in which the nuclei have become homogeneous and pyknotic, and the cytoplasm hydropic, partially keratinized, with a little rim of granules of keratohyalin giving the appearance of a doubly refractile membrane. The "grains" appear in the stratum corneum and are simply the pyknotic nuclei of the parakeratotic epithelium. That makes three diagnostic criteria: the vacuole formation (lacunae), the corps ronds, and the grains.

Keratoderma Blenorrhagica. — (Lantern slide.) This is another clinical example of a benign hyperkeratosis. Keratoderma blenorrhagica occurs as a complication of gonorrheal urethritis. This is not a common complication, but there is no question that it is a result of gonococcal infection. It appears in two clinical forms, (1) the localized, in which the palms of the hands and soles of the feet are involved predominantly in a hyperkeratotic, slightly verrucal type of change in the epidermis, and (2) the more picturesque, generalized form, in which in addition to the hyperkeratosis there is a marked inflammatory reaction of a rubeolar type causing suppuration and crusting. It clears up without much residuum after the urethritis is brought under control. It is not likely that pathologists will see this complication with the more modern methods of treating gonorrhea.

Keratoderma.—(Lantern slide.) This is the histology of the localized form of keratoderma. It is essentially a marked hypertrophy of the pegs, moderate acanthosis and hyperkeratosis, with accentuation of the granular layer. There is some inflammatory reaction in the papillary layer of the skin, but little in the deeper dermis. This is the milder form of the condition. In the generalized form there would be active suppurative inflammation in the papillary layer with vesication and crusting. Under higher power definite inflammatory reaction in the pegs can be seen. On histologic and physiologic grounds this is an example of localization. Below the papillary layer there is practically no reaction. At one point in the slide there is intracellular edema in the epidermis. When this is marked it is called spongiosis. It accompanies almost any active inflammatory dermatosis and is not of too much diagnostic significance. It is a feature of the eczemas.

Lentigo.—(Micro slide.) There is another senile change that may be confused on the one hand with seborrheic keratosis and on the other with basal cell carcinoma or with nevus. It has a variety of alterations in its later stages that make it of much more importance than it seems either clinically or pathologically in its earlier form. That is lentigo. This slide is from a 75 year old woman who had had lentiginous lesions over the arms and back of the hands for a number of years. Some of the lesions were more highly developed and clinically resembled verruca senilis, so that this slide might be shown as an early stage in the development of the seborrheic lesion.

Lentigo is characterized pathologically by an increase in pigment, not only in the basal layer but also in the prickle cells, some acanthosis, and a definite hyperkeratosis. From this simple beginning come several possibilities. In this slide can be seen the suggestion of the seborrheic keratotic lesion (senile wart). Hyperkeratosis may be prominent so that it may look clinically like xeroderma pigmentosa. From such lesions, or associated with them in the same patient, there may be frank basal cell carcinoma. Occasionally in the basal layer can be found the clear cells of Masson from which melanoma may develop. There is not a sharp differentiation clinically and pathologically in these lesions. On one hand is the fully developed seborrheic keratotic lesions, on the other a fully developed basal cell carcinoma. Lentigo is the possible intermediate stage between, or better, the common basis for those diverse clinical and pathologic entities.

Acanthosis Nigricans. — (Micro slide.) Here is acanthosis nigricans (fig. 3), another type of dyskeratosis, benign in itself, but practically always indicating internal malignancy, usually of the gastro-intestinal tract. This is a specimen removed at autopsy from a patient who died of an abdominal malignant tumor. It is one of the dermatoses that has practically a pathognomonic histologic picture. It is peculiar because there is, in spite of the hyperkeratosis, an indistinct granular layer and an extreme atrophy of the malpighian layer. In addition, there is accentuation of the pigment in the basal layer and some pigment in the malpighian layer. There is an exaggeration of the papillary layer of the dermis so that the surface

tends to be verrucal. The combination of verrucal hypertrophy, increased pigment, extreme atrophy of the malpighian layer, and a flaky hyperkeratosis are the characteristic features of acanthosis nigricans. This type of hyperkeratosis gives to the skin the definite clinical characteristic of "scarf skin," soft and velvety, which differentiates it from some of the other dermatoses in which there is a firm, horny type of dyskeratosis, for example, Darier's disease.

Xeroderma Pigmentosum.—(Micro slide.) This is xeroderma pigmentosum, which is really not a benign dyskeratosis. It not infrequently terminates as multicentric basosquamous cell carcinoma. This slide is from a biopsy specimen from the hand of a man aged 60. He had had skin trouble since childhood. The disease usually begins in childhood with a hypersensitivity to light and it is probably on a hereditary basis. The exposed surfaces of skin are, therefore, the first to suffer, especially so in summer when the actinic rays are more powerful. It is characterized by hyperpigmentation and hyperkeratosis of a flaky type. Focal atrophy in the malpighian layer, proliferation and hyperpigmentation of basal cells, and elongation of rete pegs are other characteristics. It is a chronic disease, and even though this man was 60 years of age, there is no evidence of malignant change. The pigmentation is not as diffuse as in seborrheic keratosis. There is more malpighian layer, there is not the verrucal character, and the hyperkeratosis is not as flaky as in acanthosis nigricans.

Leukoplakia.—I hope you will excuse me if I include the common process leukoplakia, for I want to show our interpretation of its varying picture. During the war the Institute of Pathology received hundreds of specimens from soldiers, not only of leukoplakia but of frank squamous cell carcinoma. They were not infrequent in boys in their late teens and early twenties. Many of them came from camps in the south—including Texas—and we suspect that sun, wind, and dust were possible etiologic factors.

We recognize two types. (Micro slide.) First is the flat form, which appears clinically as a white, smooth, nonelevated patch of mucosa, and microscopically shows acanthosis, hyperkeratosis, varying degrees of dyskeratosis, and an inflammatory reaction that involves the adjacent dermis and invades the rete pegs. There may be a certain amount of piling up of epithelium but it does not extend much above the surface, though it may extend so deeply into the dermis that it is called an inverted papilloma.

(Micro slide.) Second is the verrucal type, which is frequently seen on the lip and commonly on the skin of the face and hands. As a skin lesion it is termed senile keratosis. That nomenclature is a clinical differentiation and not a pathologic one because the lesion is identical in both instances. The hypertrophied pegs extending into the dermis should be noted, but the special feature is the verrucal acanthosis and hyperkeratosis that has piled up well above the skin surface. In the lower layers of epithelium there is dyskeratosis. Clinically, this form is more circumscribed and smaller than is the flat form.

There is constant controversy between pathologists as to whether they are dealing with simple leukoplakia or with actual malignancy. We have reached the point where we have stopped haggling. Leukoplakia is precancerous and potentially malignant and has to be treated as such, and whether or not a few cells have broken loose into the underlying corium matters little from a practical standpoint. It is purely academic whether such a slide as this is carcinoma, squamous cell, grade 1, or leukoplakia. Incidentally, we do not bother much with grading tumors and it is not necessary to mention malignant dyskeratosis or "cancer in situ" when making a diagnosis of leukoplakia. The term itself connotes these changes in the epithelium.

Senile Keratosis.—(Micro slide.) The next slide is an example of the verrucal type of senile keratosis. Here again I am speaking pathologically and not chronologically, for this is from a 47 year old man; the lesion was on the chin. The great hypertrophy of the malpighian layer, the extreme hyperkeratosis, and the accompanying chronic inflammatory reaction in the dermis that are always present in senile keratosis and leukoplakia are differentiating features, not to mention the dyskeratosis, between this and ordinary benign verruca.

Bowen's Disease. — (Micro slide.) The next slide is of Bowen's disease. This is from a 57 year old male who had had a coin-sized plaque on his left leg for four years. This is another example of the application of clinical terminology to pathology. Bowen's disease is a clinical entity, and because Bowen or somebody called attention to the cell having a hyperchromatic nucleus surrounded by clear cytoplasm present in sections from such a lesion, that cell has come to be known as the Bowen cell. Such nomenclature does not mean that this particular

type of dyskeratosis is seen only in Bowen's disease. It is practically impossible, for example, to differentiate this cell from the Paget cell. In Bowen's disease the cells are more scattered and in addition there will be giant epithelial cells — large mononuclear cells — and multinucleated epithelial giant cells. The basal layer is well defined, the dyskeratosis begins rather promptly, and in full-blown disease the Bowen cells may occur in small groups. In the keratin layer there may be both parakeratosis, including "grains," and hyperkeratosis. Under the areas of hyperkeratosis the granular layer is sharply defined. There is usually less inflammatory reaction in the dermis than in leukoplakia. Occasionally Bowen's disease gives rise to carcinoma, at times after lying dormant for years, but every case of Bowen's disease does not necessarily become malignant.

Erythroplasia of Queyrat.—(Micro slide.) The next slide is from a less common disease, which, however, more frequently results in carcinoma than Bowen's disease. This is erythroplasia of Queyrat (fig. 4). It occurs most typically in older persons, usually on the glans penis, but is occasionally seen on the buccal mucosa. It is characterized clinically by almost bright red plaques that are slightly keratotic but not to the extent that the lesions of Darier's and Bowen's diseases are. Microscopically it is characterized by acanthosis and dyskeratosis, rather more of the leukoplakic than of the Bowen type. There is usually a certain amount of inflammatory reaction, and almost always blood-vessel ectasia that gives a characteristic red velvety appearance clinically. The usual end result is squamous cell carcinoma.

Paget's Disease.—(Micro slide.) The next example of malignant dyskeratosis is Paget's disease. This again is something of a clinical entity. The Paget cell itself is no more specific than is the Bowen cell. I could not give a workable differentiation between a Paget cell and a Bowen cell—they are both hydropic cells with more or less hyperchromatic nuclei, with perhaps a greater variation in the nuclear picture in the Bowen than in the Paget cell. The pathologist must depend on the whole picture to make the differentiation. The Paget cells are more numerous than the Bowen cells; they fuse and form little lakes in the hypertrophied pegs; and the reaction in the epithelium itself is different from that in Bowen's disease—hyperplasia of the pegs rather than the verrucal type of reaction. There is more chronic inflammatory reaction than in Bowen's disease, which is also a diagnostic aid. In this particular case the change in the epithelium that occurs on the nipple also appears in the deeper ducts. I need not remind you of the invariable association of Paget's disease of the nipple with carcinoma of the breast.

Carcinoma in Situ.—(Micro slide.) The next slide is from the so-called carcinoma in situ. It is another example of a dermatologic term applied to a clinical entity, but one that pathologists should have little occasion to use because all of the malignant dyskeratoses can be called "carcinoma in situ." The gynecologists' "carcinoma in situ" of the cervix is causing concern and controversy because pathologically it is simply a dyskeratosis. This slide is from the so-called Borst-Jadassohn dermatosis in which there are multiple areas of hyperplasia and malignant dyskeratosis of the epidermis scattered over the body. Under higher power it is clear that the malignant cells are all confined to the epidermis and there is a complete absence of the granular layer under the parakeratotic epithelium.

There are several other types of malignant dyskeratosis: arsenical dermatosis, which pathologists probably will not see as frequently as they used to, and irradiation reaction, represented by the next slide.

X-Ray Dermatitis.—(Micro slide.) This section is from a young man who had had therapeutic x-ray radiations for dermal fibrosarcoma two weeks before the biopsy. It shows the immediate reaction in the skin. There are areas of acanthosis, a little hyperkeratosis, and under the higher power is seen dyskeratosis which is leukoplakic in character. There is some perivascular inflammatory reaction in the dermis, but in this early stage there is little vascular change. There may have been clinical ectasia but it does not show histologically. The pathologist would have some difficulty, without the history, of identifying this as x-ray dermatitis. That is a lesion to think of when there is a clinical picture like leukoplakia or senile keratosis with the history of radiation therapy or the use of certain drugs.

X-Ray Keratosis.—(Micro slide.) The next slide is from a 66 year old man with multiple x-ray keratoses over his hands which had developed during a twelve year period. He had had irradiation therapy twenty years before the biopsy specimen was taken. Here is the varied picture of the delayed and long-standing x-ray reaction. There are hyperkeratosis and dyskeratosis, acanthosis, hypertrophied rete pegs, hydrops of some of the epithelial cells, bizarre nuclei, and cells that might pass for Bowen cells. In some areas the dyskeratosis has reached

the point at which the dermatologist might call it "carcinoma in situ." In this stage will be found profound vascular changes. There are extreme ectasia of the superficial vessels and obliterative changes in the larger vessels in the deeper dermis. The dermis is greatly thickened and has lost its normal architecture; there are hyalinization and fusion of the collagenous bundles.

Atomic Fission Irradiation Reactions.—(Lantern slide.) I want to show two examples of the profound change which the epithelium suffered as a result of exposure to the atomic bomb. These photomicrographs were made from slides collected by the U. S. Joint Commission in Nagasaki from the Japanese doctors. In a week or so after the one instantaneous exposure to the fantastically huge irradiation these profound changes developed in the pharynx. There is a complete absence of lymphoid cells. The cells in the slide are not lymphocytes but macrophages, and there are practically no granular leukocytes because the hematopoietic system was practically wiped out. The epithelium shows great vacuolization, pyknosis of the nuclei, and bizarre nuclear and cytoplasmic forms.

(Lantern slide.) The next is from the tongue of a Japanese, showing again the bizarre reaction, but more intense. Here are cells that resemble the Paget cells—vacuolated cytoplasm and pyknotic nucleus. There is marked hyperkeratosis and a profound ectasia of the superficial vessels.

The Tumor Seminar will be concluded in the December issue of the JOURNAL. Presentations of cases and discussions of various other pathologic lesions including basal cell carcinoma, melanoma, vascular tumors, neurogenic fibromas, granulomatous lesions, and vesicular dermatoses appear in the second part.

NATIONAL INSTITUTE OF DENTAL RESEARCH

Establishment of the National Institute of Dental Research under authority of an act of Congress has been announced by Dr. Leonard A. Scheele, surgeon general of the U. S. Public Health Service. Appropriations of $750,000 a year will be used for research in the institute's laboratories at the National Institute of Health, Bethesda, Md.; financial grants to outside institutions for research and training of professional personnel; and fellowships and traineeships in the institute to promote training and research in dental diseases, their diagnosis, prevention, and treatment.

H. Trendley, Dean, D.D.S., who has been director of the Dental Research Section of the National Institute of Health, has been named director of the new institute, which will have equal status with the National Cancer and Heart Institutes and the Institute of Experimental Biology and Medicine.

A national advisory dental research council, composed of outstanding scientists, dentists, doctors, educators, and representatives of the public was also authorized by the act.

EARLY EXPERIENCES IN CLINICAL PATHOLOGY IN TEXAS

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In the closing years of the first half of the twentieth century, with its brilliant record in the field of clinical pathology, it may be worth while to tell briefly of the early beginnings in that field during the period which was just at the dawn of the motor age.

I drove a motor car, a snappy one cylinder job, in 1907, with thrills that cannot be known now, such as being arrested and fined $15 for driving 15 miles per hour, and driving as far as 20 miles without a puncture or other minor incident.

We could buy a porterhouse steak large enough for the family for two bits and have a pound of liver thrown in for the cat. The dollar was a dollar then and the income tax had not yet been dreamed of. Our wives and sweethearts wore clothes that are now back in style except for the bathing suits. Radio was not yet known, but we were spared the crooners, and the golden voice of the politician could not hypnotize an entire nation. The jokes that are now being told on the radio were the same jokes then popular. According to Mark Twain, these should be classified by geologic ages. Psychosomatic medicine was practiced by all successful physicians, only they did not know it by that name.

Those were the glorious days of the Big Four at Baltimore, and they, with their contemporaries in other great American medical centers, were to transform American medicine and transfer medical science from Europe to our own land.

Clinical pathology was practiced only in medical schools and in the larger hospitals attached to these schools; therefore, large sections of the country were without such services and to fill this need volunteers began to explore the field. Formal training was obtainable only in Europe, which was remote and expensive. Those who took these courses were in great demand as teachers and in the larger hospital centers.

My own experience, which I am told was the first such effort to be made in Texas, began in 1904. The doctors were rather slow to accept either me or the services which I had to offer, so I added the title of "professional anesthetist" to that of clinical pathologist. I must have had some measure of success because the late Dr. T. T. Jackson then made his famous statement that previous to

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this time, "Anesthesia consisted of either doing artificial respiration or chasing the patient around the house to get him back on the table." That same year came my first claim to fame when I discovered and reported the first case of hookworm infection in Bexar County.

Pioneer pathologists soon followed in other Texas cities. Dr. J. H. Black started in Dallas in 1907, Dr. Martha Wood and Dr. E. F. Cook in Houston in 1909, Dr. W. F. Thomson in Beaumont in 1910, Dr. J. E. Robinson in Temple in 1912, Dr. T. C. Terrell in Fort Worth in 1912, and Dr. Willis Waite in El Paso in 1913. Of these, Drs. Wood, Cook, and Thomson are deceased. Dr. Black is now a famous allergist.

Dr. J. H. Black, in his presidential address entitled "The Biology of the Clinical Pathologist" before the American Society of Clinical Pathology in 1930, opened with the following sentences: "The Clinical Pathologist is an animal of lowly origin and somewhat uncertain parentage. He had his origin as a biologic variant in response to an environmental demand. His development from a simple body with few and uncomplicated functions has been so rapid that in the lifetime of most of us, we have seen his evolution into a complex creature with multitudinous functions and relationships."

This was the period B. W. (before Wassermann) and it is interesting to reread the few books on pathology available at that time. Emerson published his first edition of "Clinical Diagnosis" in 1906. The contents were devoted to the chemical and microscopic examination of urine, sputum, feces, blood, gastric contents, and other body fluids. In the daily routine of present day work, pathologists have added remarkably little to what was then done. The physical aspects of these various substances were studied in the most minute detail. Blood chemistry was, of course, unknown and only came into general use at about the time of World War I. Uric acid was carefully looked for in the urine, it being the era of "the uric acid diathesis." The leukocyte count and differential and the red cell count and hemoglobin were done almost as accurately as now but the Schilling count came much later.

Most of the bacteria we work with today were discovered in the period from 1875 to 1900. Subsequent work has revealed the viruses and has been devoted to more elaborate classifications and a more exact knowledge of behavior. The blood groups were discovered by Landsteiner in 1900. It was not until 1914 that the citrate method for blood transfusions was made available, rendering the use of transfusions more feasible than had hitherto been possible.

SYPHILIS

One of the most dramatic episodes in medical history occurred in this early period: the rapid sequence of events leading to the diagnosis and treatment of syphilis.

Bordet and Gengou, in 1901, discovered the phenomenon of complement-deviation. Schaudin and Hoffman discovered the Treponema pallida in 1905. Wassermann, in 1906, adapted the complement-deviation test of Bordet to the test which bears his name to this day. Salvarsan, the so-called "606," was discovered in 1909. With all the thrills of modern discoveries, such as the antibiotics, I think that nothing can equal the excitement which we in our class of American, British, French, and Polish students experienced in seeing this new drug used in the clinics in Berlin, one year after its discovery. It was Ehrlich's belief that one dose would sterilize the entire body of spirochetes. This dose was given intramuscularly, producing large, extremely painful endurated lumps that not only lasted for weeks but subsequently, in some cases, had to be excised. It became my duty on my return home to administer this remedy, and I can remember yet the agonizing pains these produced and also some humorous features such as seeing a man having to wear an ice bustle for days at a time to keep the pain and inflammation down.

It was a few years later that the intravenous method was introduced in which 250 cc. of the diluted drug was given. I recall that the first time I used this method, I forgot to empty the long rubber tube of air and was somewhat startled when the entire tube full of air gurgled into the vein.

Thus, in the first nine years of the century, more progress was made than in all the previous years of the fight against this disease. The method of transmission has not changed with the passing of the years, however, and syphilis would be practically extinct except for general ignorance and the persistence of human "cussedness." It was Osler who said, "It is more often a dalliance with Venus than an encounter with Mars that brings a man into acquaintance with Mercury."

My first instruction in the Wassermann technique was received in Berlin in 1910 under Dr. Julius Citron working in the great Charite Hospital. The antigen was believed to reside in the spirochete, and since it could not be cultured, a rich source was found in the fetal liver of a stillborn, syphilitic child.

A normal saline extract of these livers was used and Citron followed this method for years later. However, Dr. Paul Fleischman, working in the same clinic, showed me that an alcoholic extract gave as good results. I therefore brought back a good supply of this extract, only to find that it was so anti-complementary as to be useless. Noguchi had shown in the same year that an ether soluble and acetone insoluble extract of normal liver made a good antigen. In January, 1911, I did the first complement-fixation in Texas and a notice of the fact was published in the TEXAS STATE JOURNAL OF MEDICINE by Dr. Ira C. Chase, the editor at that time. The test was soon taken up by others in Texas, and the history of its subsequent development is well known.

The fees for complement-fixation tests were high because of the few persons qualified to make these tests. At first $25 was charged; that was finally graded down to $10 in the early 1920's.

TISSUES

Tissue pathology, which is about the only thing left that technicians cannot do, has had a long and tremendously interesting career, beginning with Rokitansky, Virchow, and their illustrious successors during the ensuing years.

In the period of which I speak, we diagnosed with sufficient clinical accuracy the definitely benign and malignant tumors, although great changes have been made as to their behavior and their derivation from the embryonic structures from which they arise. Grading of tumors was made popular by Broders in 1916, but was taught by Von Hansemann as early as 1890. He called the process of de-differentiation, "reversion to embryonic type." In those days we called mixed tumors of the salivary glands, endothelioma. Indeed, the endothelioma group was large and was championed by the late James Ewing up until the time of his death. It is now considered that these tumors are limited to a small group arising chiefly from vascular structures. We regarded the embryonic carcinomas of the testes as sarcomas. Melanomas, we knew as melanotic sarcoma, and one of the mistakes which we all made for many years was the mistaking of adenosis of the breast for cancer, thus causing much useless surgery.

One of the most interesting books of that time, which I have reread, is Palmer Finley's "The Diagnosis of Diseases of Women," published in 1905. There are beautiful color plates of sections of endometrium of the various phases, all labeled endometritis. These were divided into two main types: glandular and interstitial forms. Many famous authorities were quoted in an acrimonious debate as to whether the conditions found were inflammatory in type or were benign adenoma. I am sure that all of us for years were content with the diagnosis of chronic atrophic and hypertrophic endometritis. We were able to diagnose the malignant tumors of the uterus more accurately because of that magnificent book on "Cancer of the Uterus" by Cullen, which was published in 1900, and illustrated by paintings made by the first great medical artist, Max Brödel. We were not pressed for fine distinctions because the surgical approach and roentgen-ray treatment were also in a state of evolution.

Then, as now, inadequate histories were sent to us with tissues for examination. The fixatives for biopsies were then, as now, sent in unknown strengths of formalin—some too weak, some too strong, and always too little in amount. In addition, I have received biopsy specimens in plain water, dried, in commercial wood alcohol, and even in Listerine. Physicians seem to believe that the pathologist should be able to identify sufficiently any tumors without any knowledge of the patient's history. I recall that one of my colleagues sent me a biopsy specimen which puzzled me quite a bit, and on asking him by telephone the source of the specimen, his reply was, "A Mexican woman."

Morbid anatomy or autopsy work has also made great advances. In the early days, we had considerable difficulty in obtaining permission to perform post-mortem examinations, sometimes being discouraged by cold eyed gentlemen with ten gallon hats, boots and spurs, and a Winchester rifle carelessly displayed. However, we learned then, as now, much necessary knowledge in the only way it could be learned, and thus were able to help the physicians who leaned on us.

My early years at the head of the operating table were of great value not only in improving the condition of the treasury, but in seeing many living pathologic conditions, both operable and inoperable.

This brings my account to the point that pathologists must all learn and relearn: Our standing as pathologists depends entirely on our value to those who use our services. Most physicians need aid in diagnosis and treatment, and if we are not helpful as consultants, we are of no more value than the technician who turns in a typed report.

Being physicians, as well as pathologists, we can use our ingenuity and mental processes in interpretations of laboratory find-

ings. This can many times be carried further than we realize. The late Dr. Frank Hall of Kansas City, a classmate of mine, early in his career was sent a specimen of sputum without any history or without the patient's name. He called up the doctor and told him that if his near-sighted barber would put on glasses, he would be relieved of his cough. The physician was much astonished that he had correctly diagnosed the situation, and asked how he had done so. His reply was that he had found nothing wrong with the sputum except for finely chopped hairs; this to him had meant a barber by occupation and so near-sighted as to have to get exceedingly close to his work.

Our field has grown to where most of us are general practitioners in pathology, trying to cover an ever expanding, bewildering mass of diagnostic procedures. That is an almost impossible task but must be met one way or another. The compensation is, of course, not in keeping with that of other specialties, but a love of the work and its constant challenge makes up for the lack of income. No man can forecast in this present chaotic world in which we are living what the future holds for any of us, but if we are worthy of those who broke the trails for us during the past seventy-five years and those devoted workers who are still doing so, we can be proud of our name of pathologist.

The following lines from Kipling's "The Explorer" I think express the spirit that should constantly spur us to greater efforts:

> "Till a voice, as bad as Conscience, rang interminable changes
> On one everlasting Whisper day and night repeated—so:
> 'Something hidden. Go and find it. Go and look behind the Ranges—
> 'Something lost behind the Ranges. Lost and waiting for you. Go!'"

Medical Arts Building.

MEDICAL WRITERS' ASSOCIATION

The American Medical Writers' Association was organized to succeed the Mississippi Valley Medical Editors' Association when the latter organization met September 29 at Springfield, Ill. The new group, open to physicians and laymen interested in medical writing, plans to meet in St. Louis on September 28, 1949, at which time a course in medical writing and presentation of medical papers are being scheduled.

The purposes of the association are (1) to bring into one organization all physicians interested in medical journalism and all laymen connected with the editorial or business staffs of medical periodicals, libraries, foundations, or publishing companies; (2) to help improve medical literature; and (3) to secure interchange of views of members with the idea of attaining an intelligent unity which will make effective the opinions of the medical profession in their respective communities.

MAJOR FACTORS IN REDUCTION OF MATERNAL AND INFANT MORTALITY

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Among the serious concerns of any mature and humane society which assumes to control its own affairs through representative forms of government is an interest in the wastage of life related to the process of reproduction and the replacement of one generation as it is lost through deaths by the oncoming offspring of the parents of the day.

As a nation formerly with a relatively large portion of the population made up of immigrants in the early decades of life, young adults and young children, we have, since the severe restrictions placed upon immigration just prior to World War I, become a people with an increasing proportion of elderly persons beyond the ages of procreation, with a downward trend in the birth rate and a decreasing natural increment or excess of births over deaths.

If for no other reason than an anxiety as to the future strength and wholesome growth of our nation in the next half century, we of the medical and public health professions must accept on behalf of the people the full responsibility for such safeguarding of mothers and babies as will reduce to a minimum those lost and damaged lives related to the process of replacement, the expression of that biologic urge to reproduction of our kind which comes second only after that of self-preservation.

It can be said without fear of contradiction that never before in the recorded history of man have so many people, living under any organized form of civil government and common law and representing so many racial, economic, cultural, and occupational groups, been so protected against the preventable causes of death related to pregnancy and childbearing and the early days, weeks, and months of infant life, as has been the experience of the United States during the past five years.

The statistical expression of the improvement in maternal and infant mortality can be read in the records of the nation as a whole or in those of the several states and of all the great urban and rural population groups. Suffice it to say that in the past fifteen years the loss of lives of women from puerperal causes, that is, all deaths related to the period of pregnancy, to childbearing, and to the postpartum period, has fallen from approximately 60 per 10,000 live births to

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approximately 15, and the loss of infants in the first year of life has fallen from about 75 per 1,000 live births to 30 or below. It is not only technically desirable and exact to express these two mortality rates in terms of living progeny produced, but it is socially and educationally important to emphasize to the community as a whole the bearing of the medical and public health problem upon the replacement of the passing by the coming generation. The social cost of childbearing is heavy and must be reduced by all official and voluntary, professional and lay resources of the sciences of biology and medicine, and yet the accomplishment in this country to date should give us confidence in the possibility of still greater savings in the immediate future.

My interest at the moment is more the analysis and evaluation of the major factors responsible for our present relatively favorable situation than in historical retrospect or prophecy of the future.

It surely has not been by accident that the knowledge and skills of the medical professions and the resources and authority of the health agencies of our times have been effectively applied to save the lives of mothers and babies, biologically and socially the most precious among the ages and conditions of mankind.

The matter can be approached chronologically or topically, from the point of view of effectiveness of the factors, or with a distinction between those of a voluntary or compulsory or authoritative legal character. I shall use the simple classification of professional and official factors, that is, (1) those factors which are inherent in the advance of medical art and science as applied through the personal relation between patient or family and the physician or medical institution of their choice, and (2) those factors made effective through the only two resources of the public health departments of the various levels of government, local, state, and federal, namely, sanitary law or regulatory authority and education.

PROFESSIONAL FACTORS

Taking first those factors related to the practice of medicine and for which the credit properly goes to the individual physician and to the organized medical profession, it seems clear that the self-determining initiative of the specialist in obstetrics and pediatrics has been especially important and effective. As the obstetricians of the medical schools and maternity services of the voluntary hospitals of New York City were responsible for the report of the New York Academy of Medicine study of the preventable causes of maternal deaths in that community and set up criteria by which the avoidability of such deaths could be measured or expressed, so the obstetricians and gynecologists of other cities and the specialty boards and hospital staffs of maternity services set new goals of excellence in the management of normal and complicated or pathologic confinements.

Perhaps the most practical influence of the obstetricians has been exerted through the committee on maternal mortality of the county medical society, which has made immediate study of the circumstances surrounding each maternal death as reported by the department of health. The example of the King's County Medical Society of New York in this respect has been followed in other city and some suburban county medical societies. Certainly in New York City no other single factor has affected so favorably the quality of obstetric services by general practitioners and specialists as has the continuing critical study by committees of the county societies, which gives constructive evidence of the true causes of maternal deaths and suggestions for improved management of pregnancy.

While the report of the New York Academy of Medicine declared that 65 per cent of the maternal mortality, averaging in the 1930's about 60 per 10,000 live births, was from preventable causes, actual performance in the following fifteen years has shown that 85 per cent could be and were prevented in the years 1945-1947. In this experience and in that of such other great cities as Cleveland, Philadelphia, Boston, Chicago, and Minneapolis, where substantially the same low maternal mortality rates have recently prevailed, it is difficult to find any explanation except in the better medical care of the expectant, parturient, and postpartum mother by physicians in private practice and particularly by the obstetricians responsible for the maternity services of general and notably of the voluntary hospitals.

Contributory factors have been the interested cooperation of the expectant mothers themselves and of their husbands in securing medical advice not later than in the first trimester of pregnancy and thereafter medical supervision for the other six months. Such prenatal care, which was provided for not more than 4 per cent of pregnancies in New York City thirty years ago, now reaches all but a small neglectful and indifferent minority of pregnant women, because good hospital administration requires that women reserving beds for delivery care must be registered in the prenatal clinic of the hos-

pital. With more than 95 per cent of all deliveries in the large cities being in hospitals (99.8 per cent in New York City) the chief determining factor in preventing maternal deaths has been the quality of obstetric care, which in turn has been set by staff organization, professional discipline in respect to consultant, operative, and pathologist services, and professional standards. Even in the past ten years the proportion of deliveries provided for in hospitals has doubled and is steadily increasing in all parts of this country.

As specific aids or rather new therapeutic resources, best provided in hospitals, there have been the introduction of the sulfa and antibiotic drugs and the liberal use of blood or blood derivative transfusions and the statewide organization of blood bank or blood donor services.

Shorter periods of postpartum bed rest and earlier ambulation have been encouraged by the obvious reduction in circulatory and pulmonary complications.

Discharge to the follow-up care of the visiting nurse agency or to the public health nurse has become a valued routine to make sure that the adjustment from hospital to home and even to self-support of the mother is accomplished with the least hazard to mother or child.

A reduction in the percentage of deliveries attended by midwives has occurred parallel with increased hospital maternity care. While in 1936 about 55 per cent of deliveries of nonwhite maternity patients were attended by midwives, only about 35 per cent were so cared for in 1947 in the United States. In New York City from 40 per cent of births attended by midwives in 1900 the percentage has fallen to less than .5 per cent in 1947.

Voluntary medical care insurance plans have facilitated the use of hospitals by maternity patients by making the thrifty habit of prepayment for hospital and medical care easy and economically attractive, a field of effort in which patients, physicians, and hospital authorities have closely collaborated to the benefit of each of the three parties concerned.

In a few communities a roentgenogram of the chest is a routine part of the prenatal examination in the interest alike of the mother and the child in utero, and apparently with results in early detection and prevention of tuberculosis fully justifying the expense.

For the benefit of the infant at birth the most important medical administrative practice has been the referral of the child, as soon as delivered, to the care of the pediatric service of the hospital. Accessory to this as special resources have been the medical or hospital organization of breast-milk banks for the fresh or frozen product, and for certification of a wet nurse if necessary.

Refresher courses in maternity hospitals and at medical schools have made easier than in former years the process of keeping the practitioners of medicine and nursing up to date with the best specialist skills and techniques.

The modern training of nurse-midwives and of nurse supervisors of licensed midwives under state departments of health has provided better midwives among those population groups inaccessible by distance or economic limitations to good medical care.

Among the educational resources bearing upon human reproduction may properly be included what are known as marriage counselling centers where the combined services of medicine, law, nursing, and social work are used to guide those contemplating or already embarked upon married life in respect to some of the avoidable hazards involved in procreation and childbearing.

In addition to the professional features of an educational program for the protection of maternity and infancy, there has been a broad and consistent program of education carried on by the professions of medicine, nursing, and social work and through the usual channels of schools, colleges, and the press, the objects of which have been to teach mothers, fathers, and families the principles of growth, development, and reproduction, and the principal laws of human biology and personal hygiene upon which these depend.

Before moving on into the field of official or sanitary authority and the services of departments of health, local, state, and federal, let us agree upon the three essentials for progress in any field of health protection which depends in the last analysis upon the employment of medical services by an informed public. The present success of the long and well-developed and organized campaign to save maternal and infant life has depended upon (1) medical skills and facilities for their employment being reasonably convenient and available; (2) knowledge of, or at least practical familiarity among at least the literate fraction of the population with, the value of obtaining skilled medical care to the point of feeling it to be a common sense duty and of having an impulse to secure it; and (3) ability by the average family to take advantage of the skills and facilities of medicine, through their independent or collective resources, as by the use of the insurance principle to prepay for calculable costs of an expected need for service.

OFFICIAL FACTORS

We must accept, I believe, two sets of basic facts in dealing with the contributions of public health authority to maternal and infant welfare, one of which relates to the distinction between public health and medical care and the other of which recognizes the limitations created by law and social custom on the range of functions of health departments.

There appear to me to be convincing arguments in favor of requiring of health departments those functions, not allocated to other public agencies, intended to protect and promote the public health of the community and prevent so far as practicable diseases known to be preventable, while care of the sick, whether indigent, "medically indigent," or able to pay the full cost of medical care, is a function of medical institutions and agencies devoted to diagnosis and treatment of the individual sick person.

The limitations which seems to me to exist at present, by law or custom, and so in a way to define the resources of a local health department are briefly state public health or statute law, local ordinances or sanitary codes, and health education so far as this is not provided by existing educational agencies. Authority under the law and education of the public for the sake of good health appear to me to include the necessary functions of a local health department and substantially also those of a state department of health.

The authority of the law is invoked in the interest of maternity and infancy in at least the following fields:

Premarital medical examination and serologic blood test of applicants for license to marry.

Prenatal medical examination and a serologic blood test of the expectant mother by the third month of pregnancy.

Administrative supervision over the practice of midwives.

Requirement of administration of prophylactic silver preparation to the eyes of the newborn.

Requirement of certificate of live birth, of fetal death, and of death of any person, with adequate description of cause.

Licensing and supervision of equipment, methods, and personnel of hospitals and particularly of nurseries for the newborn and for premature babies.

Regulation of blood donors, blood banks, and blood processing.

Control of artificial insemination.

Provision for laboratory determination of blood types.

Requirement of sanitary potable water supplies.

Pasteurization of all fluid milk.

Requirement that employed women receive compensation and freedom from work for at least one month prior to and one month after confinement.

The resources of education are properly applied by every member of the staff of every health department, in particular by public health nurses, physicians, dentists, health educators, and sanitarians. There is no limit to the useful scope of education in personal hygiene, environmental sanitation, nutrition, growth, reproduction, and mental hygiene as these may be related to maternity and infancy, especially if coordinated with similar educational efforts of physicians and medical institutions.

If the local health department provides not only public health nursing (1 nurse to 5,000 of population) but bedside care of the sick (1 nurse to 2,500 of the population), this personal service to the postpartum mother and to the infant until it can be taken for health guidance to the physician or baby station becomes a part of medical care under the direction of the attending physician.

It is not suitable for a local health department to enter the practice of medicine through prenatal, obstetric, postpartum, or pediatric services for mother or child unless there is no other way by which necessary services can be provided through physicians or medical institutions at personal or tax expense. Clinical services for the maternity patient or the sick child are likely to be best provided for under other auspices than those of the department of health, as by cooperative action of the county medical society and a neighborhood hospital.

The functions of the state department of health are properly supervisory, consultative, standard making, laboratory, educational, and law enforcement in nature. It is not expected that a state department of health will provide direct personal medical, nursing, or institutional service for the maternity patient or for the infant.

The contributions of the agencies of the federal government to protection of maternity and infancy, except on federal Indian reservations where some medical nursing and hospital care is provided, have been through propaganda, promotion, health education, and the administration of grants intended to aid states in providing more and better maternity and infant care.

Under the Shepard-Towner Act, the Social Security Act of 1935, and the Emergency Maternal and Infant Care program considerable services have been made available with the object of improving the use of good medical care in maternity and infancy.

It is difficult to assign any causal relationship between these federal grants and the reduction of maternal and infant mortality. Other factors of earlier and more enduring

effect and of a personal and professional nature and the activities of local and state health departments would appear to have been more important, although doubtless some maternity facilities and services have benefited by judicious local use of federal funds. It must be generally apparent that the downward trend in the mortality rates with which we are concerned has been independent of and largely unrelated to any benefits brought to the practice of obstetrics or pediatrics through federal assistance. No new skills or facilities, no improvements in practice of the medical arts appear to have originated in the Children's Bureau in the past twenty-five years. This bureau has promoted widespread public concern and a sense of social responsibility for the care of mothers and babies along lines already and previously developed by the innumerable local and state voluntary and professional organizations devoted to these objects, among which the Child Health Association and the Maternity Center Association have had wide national influence.

The welfare of mothers and babies depends now as in the past upon the state of medical science, upon the quality and distribution of personal and family medical services, and upon the application of public health authority and education chiefly at the local or community level.

While much progress has been made and the present status of maternal and infancy care is better than at any previous time in our national history, there are still large opportunities for betterment, partly by the application of our rapidly increasing knowledge of genetics in the form of human eugenics, partly by wise social guidance of parenthood in the interest of fertility of the best human stock and intelligent restraint among persons of inferior qualities, and partly by relief from sterility among at least 10 per cent of married persons so afflicted, but more particularly in the prevention of abortion other than therapeutic, of fetal deaths, and of prematurity, now the most frequent cause of neonatal mortality.

Probably in the nutrition of the pregnant woman and in more exact knowledge of the reasons for the premature birth of infants unprepared to meet the hazards of the first few days or weeks of life lie the major opportunities for still further lowering the social cost of human reproduction and for reducing the frequency with which tragedy rather than happiness terminates the process of pregnancy.

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THE MINIMAL DIAGNOSTIC SURVEY FOR STERILITY

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The problem of sterility has many far-reaching repercussions. True, it is primarily a medical puzzle, but its implications sociologically, I believe, are as important. In our country today, where voluntary sterility is practiced uncontrolled and where the divorce rate is high, the decrease in birth rate is alarming. These events will not be fully appreciated for another century.

When a barren couple seek aid, they can immediately be identified as potentially good parents and excellent citizens. Every effort possible should be made to help them.

It is estimated that 15 per cent of all marriages in America are barren, or that there are some 2,000,000 childless couples in childbearing age.[5] So great a number threatens our society, for the family is the fundamental unit of any society or civilization.

Even though our knowledge of all the factors that cause sterility is meager, there is much physicians can offer barren couples. The treatment can only be properly instituted after a complete diagnostic survey has been done. The diagnostic work-up can be elaborate and, of course, treatment can be more successful if planned by a team consisting of the gynecologist, urologist, internist, endocrinologist, and clinical pathologist. For the busy physician this is impossible. However, there is a minimal diagnostic survey that he should never deny any patient who comes to him with the complaint of sterility. Such a minimal survey is based on the most common "all inclusive etiologic factors." As outlined by Mazer,[4] they are (1) the male factor, (2) the factor of the gross pelvic lesions, (3) the factor of insemination of the cervix, (4) the tubal factor, and (5) the endocrine factor in the female.

In such a scheme of investigation, both the wife and husband will have undergone a complete and thorough physical examination. Such an examination plus a good history may reveal systemic diseases such as tuberculosis, syphilis, epilepsy, mental diseases, nephritis, heart disease, and Rh factors that may counter-indicate pregnancy temporarily or permanently, as well as reveal factors which may be contributory towards the sterility, such as persistent nervous fatigue, asthenia, dietary fads, excessive smoking and drinking, unusual sex habits, and illness during the adolescent years.

Read before the Section on Obstetrics and Gynecology, State Medical Association of Texas, Annual Session, Houston, April 28, 1948.

It must be emphasized to the couple that a complete study must be done, even after a possible cause for sterility is found early in the studies, because there are usually three or more of the factors existing. A recheck of investigations done previously must also be made as time may have made a condition better or worse.

MALE FACTOR

The male factor is given top-billing in this discussion, not because the husband is the most frequent cause of sterility, but because the male partner is frequently not investigated correctly and probably more frequently not at all. The burden of barrenness is still borne by the wife, as has been the case since the time of primitive man, and has always been surrounded with many superstitions. Although we do not accept superstitions in our present civilization, it is appalling the number of women who are subjected to many painful examinations, expensive laboratory tests and hormone treatments, and even subjected to surgery without the doctor even suggesting that the husband be investigated, when the man will contribute an etiologic factor up to 60 per cent in the cases of sterility.[8] Investigators of sterility should consider the male partner in sterility problems with the same importance that the "cattle man gives his bull for his herd of cows."

After getting the male partner to submit to an examination of his semen, there are many difficulties in the interpretation of the semen. The clinical problem in the examination of the semen is not only to recognize spermatic diseases, but to interpret the fertility of the husband on the basis of the fertility index of his wife.[9] It is perhaps this difficulty of distinguishing fertility from clinical infertility of the male and the usual type of commercial laboratory reports stating merely that a large number of well developed and active spermatozoa are present without an actual count or stain which cause the physician to look on such an examination as offering little help or as the last resort in sterility problems.

A clinical examination of the semen as outlined in any textbook of urology will suggest that the following characteristics of the semen be noted: volume, viscosity, approximate hydrogen ion concentration, number of spermatozoa, motility, viability, and morphology. Any abnormalities detected by such an examination, regardless of the apparent unimportance, should be corrected if possible because the highest rate of fertility occurs with the male partner having so-called normal semen.

The collection of the semen by withdrawal during coitus and ejaculation into a clean, wide-mouth jar instead of using a condom is now well known, but such a procedure cannot be suggested to any patient by a doctor of the Catholic faith; nor should a patient who is a Catholic be asked to collect a specimen in this manner or by masturbation or by a condom unless a small hole has been previously punctured in the condom. For this group of husbands the semen specimen can be collected by using a rubber cup that is inserted into the vagina after coitus and removed in the doctor's office.[7]

LESIONS OF PELVIC ORGANS

Gross lesions of the pelvic organs will be detected in the routine gynecologic examination as part of the first complete physical examination. It is estimated that 5 per cent of the women who come for investigation because of a barren marriage will have such pathologic lesions as fibroids, ovarian tumors, and chronic pelvic inflammation, including quiescent tuberculosis of the pelvic organs.[4] If any of these diseases are found, they will be of more importance for treatment than the sterility, and thus the sterility investigation must be delayed until such disease is eradicated.

The pelvic examination all too frequently is the only examination offered to a woman with the complaint of sterility. It is common to secure such histories as, "My doctor examined my pelvis and told me everything was normal and that he could see no reason why I shouldn't get pregnant," or, "My doctor told me my female organs were all right but that I needed some hormone shots, which I took all last spring." If the minimal diagnostic survey was made in all cases of sterility, such statements would never be made.

INSEMINATION OF CERVIX

Spermatozoa that have been pronounced normal by a complete examination of the semen are then followed to determine if they have been deposited in the vicinity of the external os and have penetrated the cervical secretion. Sufficient number should remain active in the cervix at the end of several hours. This is determined by an examination of the wife after coitus which is known as a Huhner test. The Huhner test gives valuable information only if the following criteria, as outlined by Mazer and Israel,[4] are fulfilled: (1) time of coitus is not prescribed; (2) the examination is made from five to six hours following elective coitus; (3) the test is done

near the time of ovulation, at which time the cervical mucus is most favorable to motility and endurance of spermatozoa; and (4) the test is preceded by a few days of sexual continence.

The Huhner test is carried out by placing the patient in the usual position for a gynecologic examination. A dry speculum is inserted, exposing the posterior fornix, and some of the secretion is aspirated from the vaginal pool by a sterile pipet. The area around the external os is wiped with cotton and the cervical canal is aspirated with a second sterile pipet. Then with a third, larger, cone-shaped pipet, the mucous plug near the internal os is aspirated. The aspirations are immediately placed on three glass slides with cover slips and examined under a microscope.

A normal test will reveal a considerable number of nonmotile spermatozoa in the secretions from the posterior fornix. The period of time that the spermatozoa will live in the vagina depends on its hydrogen ion concentration. Normally, only about 10 per cent will be found motile at the end of two hours. The findings of the spermatozoa in the posterior fornix indicates that the semen has been deposited in the proper area. Examination should also normally reveal an average of 15 migrating spermatozoa per high powered field in the two cervical specimens. Such a finding proves the absence of a mechanical obstruction in the canal and the absence of cervical secretion hostility. A test revealing less than 15 spermatozoa in either of the two cervical specimens indicates the necessity for a repetition of the test and careful investigation as to why there are less than 15 migrating spermatozoa per high powered field. A normal test does not establish the degree of fertility for the husband. A careful examination of the ejaculated semen is essential for such diagnosis.

TUBAL FACTOR

Although the exact mechanism of how the spermatozoa and ova are propelled through the fallopian tubes is not definitely known, the high percentage of pathologic tubes that are associated with sterility cases is recognized by every investigator. Rubin estimated the tubal factor in which the tubal patency is established to be 46.44 per cent.[6] The status of the tubal patency can only be detected by determining if a gas or radiopaque medium can be passed through the uterus and tubes into the peritoneal cavity. To make such a diagnosis by bimanual examination is only conjecture, as is pointed out in Aldridge's series of 600 cases; 30 per cent of the patients had either a partial or complete obstruction as detected by the patency test, although the "bimanual examination" in these cases revealed a normal pelvis.

The uterotubal insufflation,[1] known as the Rubin test and as performed ideally by Rubin, consists of the passing of carbon dioxide through the uterus and tubes into the peritoneal cavity, at a regular rate and under measured pressure. When the tubes are completely patent, the carbon dioxide will enter the peritoneal cavity through the tubes at a pressure of from 40 to 80 mm. of mercury. If higher pressure, such as from 140 to 200 mm. of mercury, is necessary to force the gas through the tubes into the peritoneal cavity, the tubes are partially occluded. When the pressure reaches 200 mm. of mercury and remains at that level with the gas shut off, it indicates that there is a complete obstruction of both tubes.

If a kymograph can be connected into the apparatus passing the gas into the uterus, a graphic and permanent record of this test can be secured and, like electrocardiographic tracings, it can be used for comparison with future tests, especially those after treatment, as it registers the tubal peristalsis accurately. Frequently such conditions as tubal spasm, partial stricture, and degrees of ovarian activity can be detected. Hence, to diagnose accurately the status of tubal patency, the flow of carbon dioxide should be under both volumetric and monometric control, and graphically recorded. It would seem, therefore, that the more simple apparatus consisting of a uterine cannula, a manometer, and rubber bulb should be mentioned only to condemn it. This simple apparatus does not permit the use of volumetric control, graphic recording, or carbon dioxide, and thus the interpretations are frequently inaccurate. This is all true, but this simple apparatus can indicate complete patency or complete occlusion, and the therapeutic benefits of this test, by opening total or partially occluded tubes, must always be kept in mind.

When the Rubin test is done, whether by the most expensive apparatus on the market or the simplest, asepsis and antisepsis must be observed at all times, and every movement must be done with utmost gentleness. Furthermore, it must never be done in the presence of any infection of any part of the genital tract, regardless of how mild it may be; nor should it be done after a history of mild reaction, such as a slight rise in temperature and pain in the lower abdomen of several weeks' duration after a previous Rubin test,

as this is suggestive of a quiescent tuberculous salpingitis. It should not be done on a patient with serious cardiac or respiratory disease or within an interval of less than three or four weeks after a previous Rubin test.

The Rubin test should be done between the fourth and seventh day following cessation of menses, never after the tenth day unless pregnancy can be ruled out by a Friedman test or a history of sexual continence, and never during the presence of any uterine bleeding, regardless of the source. There should be a delay of from three to five minutes before starting the carbon dioxide or air after insertion of the uterine cannula to allow for relaxation of a tubal spasm that may have been evoked by the introduction of the cannula. After two Rubin tests indicate that the tubes are not normal, the second having been performed after the administration of an antispasmodic, such as atropine, to overcome a possible tubal spasm, the injection of a radiopaque medium into the uterus and tubes for roentgen-ray studies is a valuable diagnostic aid in locating the site of the obstruction and occasionally of therapeutic value in opening up the tubes.

If the hysterosalpingography is done by using the Hudgins' cannula, the therapeutic effect will be noted more often. The Hudgins' cannula is a cone-shaped cervical, screw-type self-retaining cannula containing a ball valve. If the first roentgenogram after the injection of the opaque medium demonstrates an obstruction of the tubes, the opaque medium can be retained in the uterine cavity by the cannula for as long as 24 hours if necessary. The prolonged rhythmic pressure produced by the uterine contraction is more apt to overcome the tubal obstruction than a single injection under controlled pressure for the short time that it takes to inject the medium. Another advantage of using the Hudgins' cannula is that the medium may be injected by the physician in his office, and then the patient may walk to the office of the roentgenologist for a flat roentgenogram of the lower abdomen thirty minutes later. The counter-indications for hysterosalpingography are the same as those for the Rubin test and the same precautions about the injection of carbon dioxide or air are applicable to the injection of the medium, namely, asepsis and not too much pressure.

ENDOCRINE FACTOR IN FEMALE

Ovulation is the best sign in the expression of fertility; hence, it is important to know if ovulation occurs. It is more important to know when ovulation occurs and most important to know if ovulation does not occur. The evaluation of this phenomenon demands utmost consideration in the diagnostic survey of sterility. Some stigma of endocrine dyscrasia may already have been detected in the initial physical examination. Two indirect methods of ascertaining the pertinent information relative to ovulation are the study of the basal body temperature and biopsy of endometrium secured during the first twenty-four hours of menses.

Greulich[2] had the opportunity to study 70 feeble minded women who were subjected to sterilization, as permitted by law in New Hampshire and California. The menstrual records of these patients were complete and the temperature was obtained daily, at least, for one complete cycle preceding the cycle in which the sterilization was performed. It was thus possible to compare the basal temperature chart with the gross and histologic picture of the ovaries at the time of operation. From such a study, he came to the conclusion "that the basal body temperature technique is the most reliable and the most convenient technique we now possess for detecting ovulation." Greulich's observation from this study indicated that when ovulation occurs, it can be plotted on the basal temperature chart after the temperature has passed its low mark and has begun to rise to what is regarded as the post-ovulation level.

The endometrium has been referred to as "the mirror of the ovary" or "the handwriting of the ovary on the wall of the uterus"; and the sloughing off of the endometrium during menses has been referred to as "the tears of a disappointed uterus." Such phrases should emphasize the constant day-to-day changes in the endometrial architecture, which is entirely dependent on the ovaries for its existence. Hence, the endometrial histologic pattern will reflect the stage of ovarian activity, so that the finding of a secretory type of endometrium at the onset of the menses denotes that ovulation has taken place. It must never be forgotten that the finding of a nonsecretory endometrium at this time does not necessarily denote failure of ovulation. It is only upon repeated biopsy showing proliferative type of endometrium that a diagnosis of an ovulatory bleeding can be made.

CONCLUSION

The investigation of the causes of sterility in a barren wife should not be undertaken unless the husband will cooperate and submit himself for an examination too, because the husband will contribute factors toward the causes of sterility in up to 60 per cent of the cases. This investigation includes a com-

plete history and physical examination of both partners not only to determine the state of health of the couple but to detect factors that may be contributory towards sterility.

Before a doctor ever starts to treat a barren couple, he should have answered, to his satisfaction, these five questions:

1. Are the sperms normal and active and in sufficient number?

2. Is there any disease of the female pelvic organs that can be detected on bimanual examination?

3. Are the sperms being deposited in the posterior fornix, and do sufficient number of sperms penetrate and live long enough in the cervical mucus?

4. Are the tubes patent as determined by the patency test?

5. Is ovulation occurring? If so, when? If not, why not?

To answer these questions, the physician must conduct a diagnostic survey. Such a diagnostic work-up for sterility constitutes only the minimal amount of diagnostic investigation.

A physician should not attempt to treat a case of sterility until he has the answers to these five questions because he cannot treat sterility intelligently unless he is aware of all the etiologic factors in every given case of barren marriage.

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ABSTRACT OF DISCUSSION

Dr. W. B. Lasater, Mineral Wells: The minimal survey of infertility as presented by Dr. Boehler does not leave much to be said. The subject is timely and socially important. His presentation is clear as to details and to the point.

Interest in infertility has been renewed in the last few years, with attention directed particularly to the male, who has been found to be the responsible factor in more than a third of all sterile marriages. Sterility therefore is regarded as a disorder of the married couple and demands investigation of both parties. A rational approach to the problem is indicated in the etiologic survey of factors involved as presented in the outline from Mazer.

The study of sterility is rightfully begun with a careful and detailed history followed by a thorough physical examination which is supplemented by a special examination of the generative tract. Organs must be evaluated as to structure and function. Usually there are from three to five abnormalities in each subject of primary sterility.

In the male it must be ascertained that he possesses normally developed genitalia without too much impairment by disease, that he can produce normal sperms, and can deposit them in a physiologic and normal functional manner.

In the female it must be determined that the cervical os is patent, that there is continuity of lumen in the upper genital tract, and that ovulation occurs. The methods of examination have been detailed so that they are simplified and applicable to office use.

Examination of the male is best made by the urologist. Furthermore, selected cases of aspermia or oligospermia might be referred for testicular biopsy or assay of urinary androgens where laboratory facilities are available.

In the endocrine survey mention should be made, I think, of the basal metabolism test and thyroid administration to all patients whose metabolic rate is zero or below. Rubin stated that there are two endocrine products of therapeutic value in sterility at this time, thyroid and estrogens, thyroid because of its trophic effect on the ovaries and on general metabolism, estrogens because of their activating effect on the fallopian tubes and possibly on cervical secretions.

Perhaps the greatest reward of appreciation that the physician receives comes from these childless couples who are helped to the realization of offspring. Attention to the principles and methods as pointed out by Dr. Boehler will help attain the desired results.

Dr. B. H. Passmore, San Antonio: Most cases of sterility are caused by low thyroid and low ovarian activity.

There are a few mechanical conditions that are obvious when present and, of course, must be overcome. Many patients conceive after a retroverted uterus is replaced and supported with a pessary; others after a severe cervical mucous discharge is cleared up.

In approaching the treatment of a sterility case, three or four months of treatment should be undertaken to correct the above conditions before tubal insufflation is used. Most of these patients will get pregnant within that time if properly treated. Where there is a history of pelvic infection or where this may be suspected in the history so there is a reasonable expectation of stenosed tubes, it is more logical to insufflate as soon as proper conditions are established. I have had only 1 patient conceive after tubal insufflation and have had more than 150 conceive before I reached the stage of treatment that I thought indicated insufflation of the tubes. I do not have the exact number that have been apparent failures after the tubes have been insufflated, but I still believe this procedure presents a minor role in the treatment of sterility and is used in many cases in which it is not indicated.

There can be no isolationism in the field of health. The fight against infectious disease is not a national or racial problem; it is a task for the whole of humanity. . . . The all-inclusive objective of any sound tuberculosis programme is the prevention and eventual eradication of tuberculosis from the peoples of the world.—Bull. World Health Organization, 1948.

UTEROTUBAL INSUFFLATION WITH USE OF THE KYMOGRAPH

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Uterotubal insufflation has long been accepted in the search for the cause of sterility. However, the addition of the kymograph has not taken popular medical fancy as did the original procedure. This is unfortunate because so much additional information is to be gained by its use. The usual procedure only reveals whether one tube is open or both occluded and the pressure at which the gas passed. This is but a small part of the knowledge that can and should be ascertained if the physician is to do his best by the problem.

Literature concerning the use of the kymograph is rather scant but it usually states that its main advantage is a permanent record of what Norman F. Miller calls "tubal behavior." That statement is true except for the inference that the record is important only as a record. It is important as such for purposes of comparison when several insufflations are done on the same patient. However, the record's greatest importance lies in the picture it presents for interpretation. If the operator could maintain steady enough pressure of the gas in the tubes and his eye were quick enough to observe all the mercury fluctuations and then if he could reconstruct the whole picture for purposes of interpretation, the record would be unnecessary. That is, the interpretation could be recorded and the ultimate outcome as far as the patient is concerned would be but little changed. However, such agility is not common and therefore the record becomes extremely important in that it can be thoughtfully evaluated in the light of its several possibilities.

It is not within the province of this paper to discuss indications, contraindications, or technique. Those factors remain unaltered by the kymograph and have been discussed at length many times. There are, however, two points concerning the apparatus and equipment which bear stressing. The first of these is that the gas pressure must be steady and controlled. The second is that for better interpretation, the operator himself, not an assistant, should listen for the sound of gas passing through the tubes. Also, in so doing he must have his hands free for the several things he will find to do. This is best accomplished by using the Leffscope. It has a heavy weighted bell which stays where it is placed and is advocated by Dr. Rubin in his excellent new text *Uterotubal Insufflation.* Steady and controlled gas pressure is accomplished by the gas passing by a reduction and needle valve and through a syphon meter. From there is a two-way egress under the same pressure, one to the mercury column and one to the cannula. The Rubin apparatus with kymographic attachment is simple, practical, and easy to operate. Most other apparatuses are only variations of Rubin's original machine.

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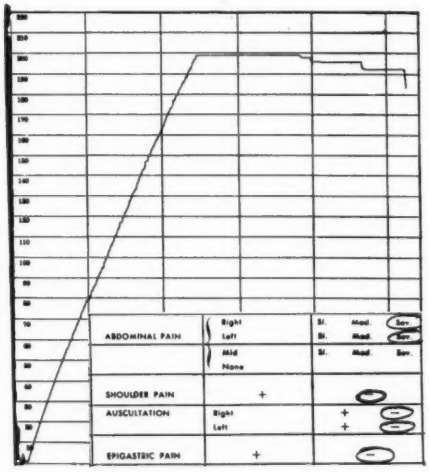

FIG. 1. Kymogram of patient A. Here the tracing alone would indicate bilateral occlusion. The symptoms and findings bear it out.

The kymograph alone and unsupported by other findings will usually indicate if the tubes are patent or occluded; if there is an obstructive spasm; if there is stenosis, and to considerable extent the degree of stenosis; and the important factor of tubal function. The stark writing of the graphic pen reveals the above, but the location of pain and the auscultatory findings greatly support and enhance those diagnoses. It is the correlation of these signs and symptoms with the tracing which permits a finer diagnosis. Since the tracing alone is that of the tube with the lesser or no pathologic conditions, it is easy to understand the importance of the physical signs in locating the pathologic condition. Using the kymograph, checking for location of pain, and listening for the passage of gas together usually make possible the location of the pathologic condition, a distinct advantage over the more commonly used type of insufflation. To this end and to make a complete record, I have added to the usual graph papers the questions which appear superimposed on the illustrations. With this information to aid in the interpretation of

the tracing the physician could at any later date understand the state of tubal function and pathology at the time of insufflation.

In the normal tube the pen will show an initial rise of at least 30 to 50 mm. of mercury. More commonly it will rise to somewhere between 50 and 100 mm. and then quickly drop back to from 20 to 50 mm. The normal rhythmic excursion of the pen then depends on tubal contractions but usually ranges from 10 to 30 mm. A variation of less than 10 mm. is probably caused by uterine contractions. The amplitude and rate of contractions are indicative of the state of tonicity of the tubes and appear to be directly related to the state of ovarian function and to the time in the ovarian cycle. In the amenorrheic and menopausal woman the amplitude and rate of contractions are diminished. The auscultatory findings coincide with the tubal contractions. In the normal tube there will be silent periods during which the tracing pen rises and the tube contracts and periods when the gas can be heard passing out the fimbria as the pen falls and the tube relaxes. Variations in this cycle indicate variations or impairment of tubal function.

There is usually but slight discomfort to the patient with normal tubes although she may have some cramp-like pain above the symphysis due to distention of the uterine cavity. Variations from the normal tubes produce characteristic change in contractions, pain, and auscultatory findings. The location of pain offers a good index as to the obstructive site. Pain over the symphysis in the midline would indicate obstruction at the uterotubal junction. In progression, pain more laterally would indicate a pathologic condition more distally along the tube until obstruction at the fimbria typically causes pain far out to the sides and in the lumbar regions.

Tubal occlusion, if bilateral, presents a typical picture. The pen will steadily rise to the desirable maximum of pressure and remain at that level until the test is terminated. The passage of gas will not be heard. Pain may be an outstanding symptom of this type of obstruction and may cause early discontinuation of the procedure. When the obstruction is unilateral, the location of its site presents a more difficult problem. It must be remembered that the tracing recorded is always the behavior of the tube with the lesser or no pathologic condition. Thus if one tube is obstructed and the other normal, the tracing will be normal but typically gas should be heard passing through the patent side and pain should be felt on the occluded side. Occasionally in such instances the patient's interpretation of the pain and the operator's interpretation of the auscultatory findings may lead to confusion. For practical purposes the location of the obstruction is not too important here since one normally functioning tube can permit a pregnancy. It becomes more important when

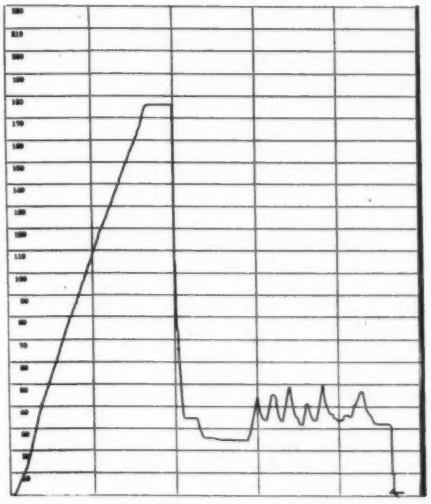

FIG. 2. Kymogram of patient B. The diagnosis was tubal spasm, severe, with return to normal function.

the ovary has been removed from the side of the good tube, but even then it is well known not to preclude pregnancy. However, it certainly is a definite sterility factor.

Great care must be used in diagnosing bilateral obstruction so that it is not confused with uterotubal spasm. Disregarding the various etiologic theories, the fact remains that spastic tubal occlusion is a definite entity. Since most commonly the pain is found to be midline pain, it is logical to assume that most commonly, at least, it is the uterotubal junction involved. This is the site where the thickened circular muscle layer is often said to have a sphincter-like action. The initial pressure rise in spasm is most often from 100 to 150 mm. of mercury, but it will often be from 150 to 200 mm. with lessening incidence as the higher figure is approached. In typical spasm the initial rise of the pen is followed by a rather rapid drop to a level comparable to the tubes' condition and a resumption of whatever activity it is capable. Occasionally a spasm may prove diagnostically troublesome by lingering long enough to appear as an occlusion. Since the prognoses of the two are considerably different, a mistake carries the possibility of much embarrassment.

A spasm may be produced by contact of a cold speculum or by the introduction of a cannula. When the patient complains of cramp-like pain after inserting the cannula, the operator should wait a minute or two for the cramps to subside before beginning the test. I have recorded on the same graph the following tracings: First, the passage of gas at a normal level but without function. Following this I manipulated the cannula and tenaculum only slightly and then recorded a spasm which carried the pen up to 200 mm. nounced are the symptoms and findings on insufflation. As in occlusion, the stricture may exist at any location in the tube and also, as in occlusion, the location of pain is usually indicative of the site of stricture. The initial pressure rise is most often to between 120 and 160 mm. of mercury. It is also thus that a spasm might initially manifest itself. However, the similarity ordinarily ends there.

The pressure in spasm will drop sharply unless it is sufficiently unusual to continue

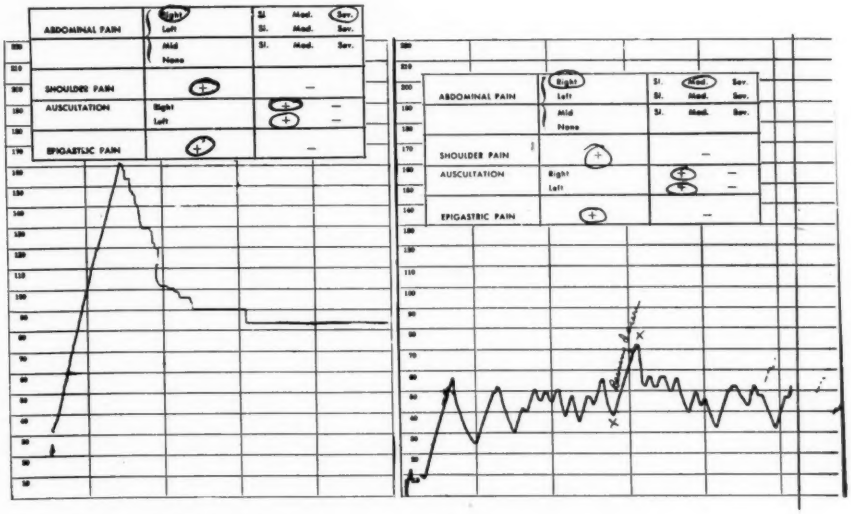

FIG. 3. Kymograms of patient C.

Left. At the first insufflation the diagnosis was initial tubal spasm, moderate degree, with subsequent tubal patency but nonfunction, and probable peritubal adhesions. Symptoms and findings indicate a stenosis of the right tube because of the severe pain far out to the right and because on that side there was a steady, high-pitched sound of passing gas. It can be seen that the form superimposed at the top is inadequate. This was later changed to include whether the sound was high or low pitched, constant or intermittent.

Right. At the second insufflation the diagnosis was normal patency and function. The symptoms and findings indicate improvement in the stenosis of the right tube. The pressure rise while the patient was bearing down indicates that the gas is in the peritoneal cavity. Such a finding is also possible with a large and flaccid uterus or greatly dilated tube, but is unlikely. This tracing shows the value of repeat insufflations.

This was followed in a few minutes by a third tracing much like the first. That example shows the ease with which the physician could be in error. It would seem that this ease of error would be increased where the physician did not have the support of the kymograph because of a natural tendency to strike a level and stop before an adequate time trial. Any tracing which appears to be a tubal obstruction should be followed at another time by a repeat test preceded by the use of some antispasmodic. In the light of two occlusive tests preceded by an antispasmodic, a diagnosis of tubal occlusion can be made.

Tubal stenosis may exist in any degree up to occlusion and it happens logically that the greater the degree of stenosis the more prolong enough to be confused with an occlusion. The pressure drop in stenosis is gradual and often consists of a rounded out or bulging sort of curve. Furthermore, the pen does not return to a normal level but to a higher plane which is consistent with the degree of stenosis or the difficulty the gas encounters in getting through the tube. Contractions are to a degree variable with the extent of stricture. Ordinarily, in the more severe stricture there will be no contractions, but in slight stricture there may be weak and irregular contractions. On auscultation the sound of gas can be heard constantly, and the more severe the stricture, the more high pitched the sound. This constant sound occurs because the tubal rigidity due to the probable infectious process prevents the

complete interference with the passage of the gas as occurs in contractions of the normal tube. Pain which usually coincides with the location of the stricture also is usually proportionate to the degree of stricture. Pain is a characteristic finding. It is constant as it also may be in occlusion, but in this instance the point of differentiation is that gas may be heard passing from the tubes.

When the stricture is unilateral, a diagnostic problem is presented in which the symptoms and findings become more important. When the nonstrictured tube is normal, the recording is normal but constant pain and constant high pitched sound will be heard on the opposite side. When one tube is occluded and one stenosed, the recording will be that of stenosis and the differential diagnosis rests mainly on auscultation. The pain of the occluded side may nearly match that of the strictured side, so it is the flow of gas which must be the differential point.

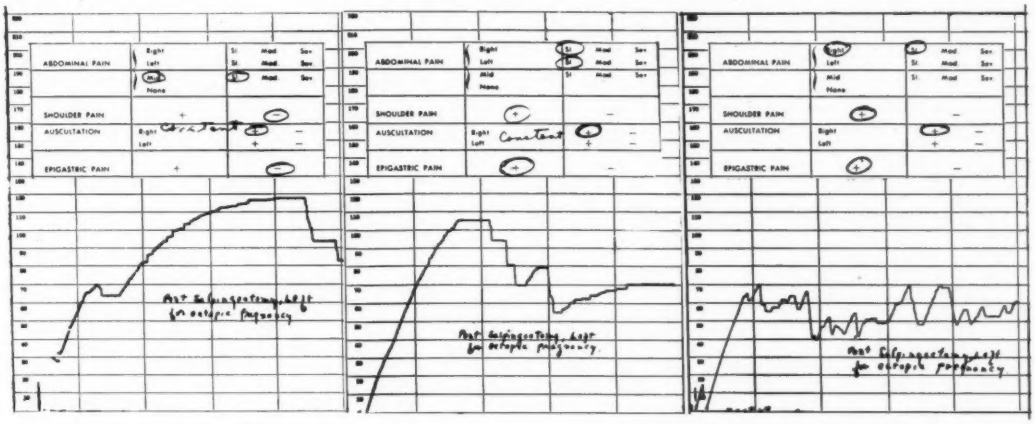

FIG. 4. Kymograms of patient D.
Left. At the first insufflation the diagnosis was tubal patency, nonfunction, peritubal adhesions. The left tube had been removed with an ectopic pregnancy six weeks previously.
Center. At the second insufflation the gas goes through at a lower level and there is some indication of returning function.
Right. At the third insufflation the tube has returned to fairly good function. It is believed that this improvement is due to the repeated insufflations. It also seems probable that without the kymograph the physician would have stopped with the first insufflation.

In my experience simple nonfunction is by far the most frequently demonstrated pathologic condition. This is usually believed to be the result of peritubal adhesions which serve to splint the tube, permitting a flow of gas but prohibiting contractions. Here, as in stenosis, the sound of gas passing is usually constant but is less high pitched than in stenosis because of less interference within the lumen itself. The gas goes through at a lower level than in stenosis, usually around 100 mm. mercury but often at a normal level. Pain is increased over that in the normal tube because of the tug on the adhesions, but it is a variable factor and not of much diagnostic importance.

Nonfunctioning tubes are important sterility factors. It is not believed that the ovum is in any way capable of self propulsion. Also, it is not generally accepted that the ciliated epithelium of the tubal mucous membrane serves to carry the egg to its proper destination. However, much has been done to show that the tubal contractions are purposeful. They have been shown to increase at time of ovulation and it is believed that their direction is toward the uterus. It would appear that tubal contractions play a major role in the egg's migration and when absent, while not precluding pregnancy, make that state considerably less likely. It is a sterility factor about which considerable can often be done. Repeated insufflations often greatly improve function presumably by the impact of the gas suddenly stretching the adhesion. It is now my practice in nonfunction to do three insufflations unless normal function is demonstrated on the second.

All the fine points of diagnosis just discussed are made possible by the interpretation of the kymographic tracing as correlated with the symptoms and findings. It is a refinement over the usual simple insufflation and appears too valuable to be overlooked in the search for the cause of sterility.

There seems to be considerable needless controversy over which is the better test, insufflation or hysterosalpingography. It is conservative to state that each has its proper place. Greater morbidity and mortality, even though small in itself, has been shown for hysterosalpingography. There has not been one recorded death following insufflation with carbon dioxide gas. Therefore it would

seem more conservative to use the safer method first. In most instances that is all that would be necessary. In cases of doubt and where corrective surgery is contemplated, visualization should be obtained. The slight added risk is no small factor to the individual patient concerned and becomes worth while only when the gain is worth the risk.

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ABSTRACT OF DISCUSSION

Dr. J. L. Jinkins, Galveston: This is a timely paper in view of the increasing accent upon sterility investigation and treatment. I can agree with the arguments in favor of using the kymograph in conjunction with the Rubin apparatus and carbon dioxide as being safe and helpful both diagnostically and therapeutically. The use of symptoms (pain, its location and intensity) along with the usual Rubin findings of auscultation, gas pressure level, and peristalsis, and the shoulder pain upon erect posture, is a logical and practical approach.

I would agree, from what I have seen in the clinic, that repeated insufflations, both in tubal nonfunction (splinted tube) and in stenosis, are definitely indicated therapeutic measures that really pay off in pregnancies produced.

Dr. Chapman says "in the light of two occlusive tests preceded by an antispasmodic, a diagnosis of tubal occlusion can be made." In view of my experience in the clinic, where I have seen passage of radiopaque material (oil, and so forth) after failure of insufflation, I do not believe such an unqualified statement is justified. Stenosis, perhaps, but not occlusion.

Again, Dr. Chapman states that the added risk of hysterosalpingography becomes worth while only if the gain is worth it. This he restricts to "cases of doubt and where corrective surgery is contemplated." "Cases of doubt" can cover all the indications where we use hysterosalpingography, and still leave out "where corrective surgery is contemplated."

This thoughtful paper I believe to be highly significant for its interpretation of combined signs, symptoms, and pressure reading.

MASS TUBERCULIN TESTING IN EUROPE

Tuberculin testing of from 40,000,000 to 50,000,000 children in Europe and offering vaccination with BCG to all found to be uninfected by the tubercle bacillus is being undertaken by the United Nations International Children's Emergency Fund, the World Health Organization, the Danish Red Cross, and other Scandinavian Red Cross chapters. In addition to affording a means of relief from tuberculosis to the younger population of Europe, this program, according to Dr. Carroll E. Palmer, senior surgeon of the Tuberculosis Control Division of the U. S. Public Health Service, offers "brilliant possibilities in terms of increasing our knowledge of tuberculosis. Indeed, the project may well serve as the basis for the most extensive epidemiological study ever undertaken for any disease."

The clinical and x-ray pictures of virus pneumonia may at times be duplicated by early acute tuberculosis, and patients diagnosed as having virus infections should not be dismissed until the chest films are entirely clean.—David T. Smith, M. D., Am. Rev. Tuberc., April, 1948.

ENDOMETRIAL DATING

MAX H. BLEND, M. D.
DALLAS, TEXAS

The value of the endometrial biopsy as an aid to the solution of menstrual disorders and particularly in the problems of sterility has long been recognized. In many instances, knowledge as to the ability to ovulate can be obtained only by histologic study of the endometrium, although the use of basal temperature graphs is of much value.

The usual pathologic report on endometrium submitted for these problems merely states that the particular specimen is of the secretory or nonsecretory type. A statement that the secretory endometrium is either early or late may also be made. Under most circumstances, such a report is adequate.

In recent years much attention has been directed toward the ability of the endometrium to undergo complete maturation in its response to the corpus luteum. Failure to do so may be an explanation for the apparently barren marriage in which the woman does ovulate and presents no other cause for the sterility, either mechanical or endocrinologic.

This paper attempts to present the varying histologic changes occurring in normal endometrium throughout the entire menstrual cycle. No claims for originality are made, with the exception of the preparation of the illustrative material. Endometrial dating is primarily based upon criteria set down by Drs. John Rock and Marshall Bartlett,[5] and elaborated upon by Dr. Arthur T. Hertig, pathologist for the Free Hospital for Women and the Boston Lying-In Hospital. A much more detailed presentation of this interesting histologic phenomena can be found in Dr. Hertig's paper "Diagnosing the Endometrial Biopsy."[2]

HISTOLOGIC DESCRIPTION

Sections for the illustrations were secured from the pathologic material in the laboratory of the Parkland Hospital, Dallas, Texas. An attempt was made to establish the day in the cycle when the material was collected, and this was checked at a later date by a study of the clinical record.

Endometrial dating is based upon an ideal menstrual cycle of twenty-seven days with the first day corresponding to the first day of the menstrual flow. The cycle is divided grossly into proliferative and secretory or progestational or differentiative phases. The proliferative phase does not lend itself to the finer histologic changes of the progestational phase, but sufficient variations occur

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so that the histologist recognizes the early, mid, and late stages of this half of the cycle.

It may be well at this point to call attention to the fact that variations in the length of the menstrual cycle are the result of variations in the proliferative rather than in the progestational phase. The latter has been found to begin fourteen days plus or minus two days prior to the onset of the next menstrual period.[7]

The early proliferative endometrium of about the seventh day of the cycle is characterized by a thin surface epithelium, which is especially thin at a distance from the gland mouths (fig. 1a). The epithelial cells are cuboidal to columnar in type. The gland

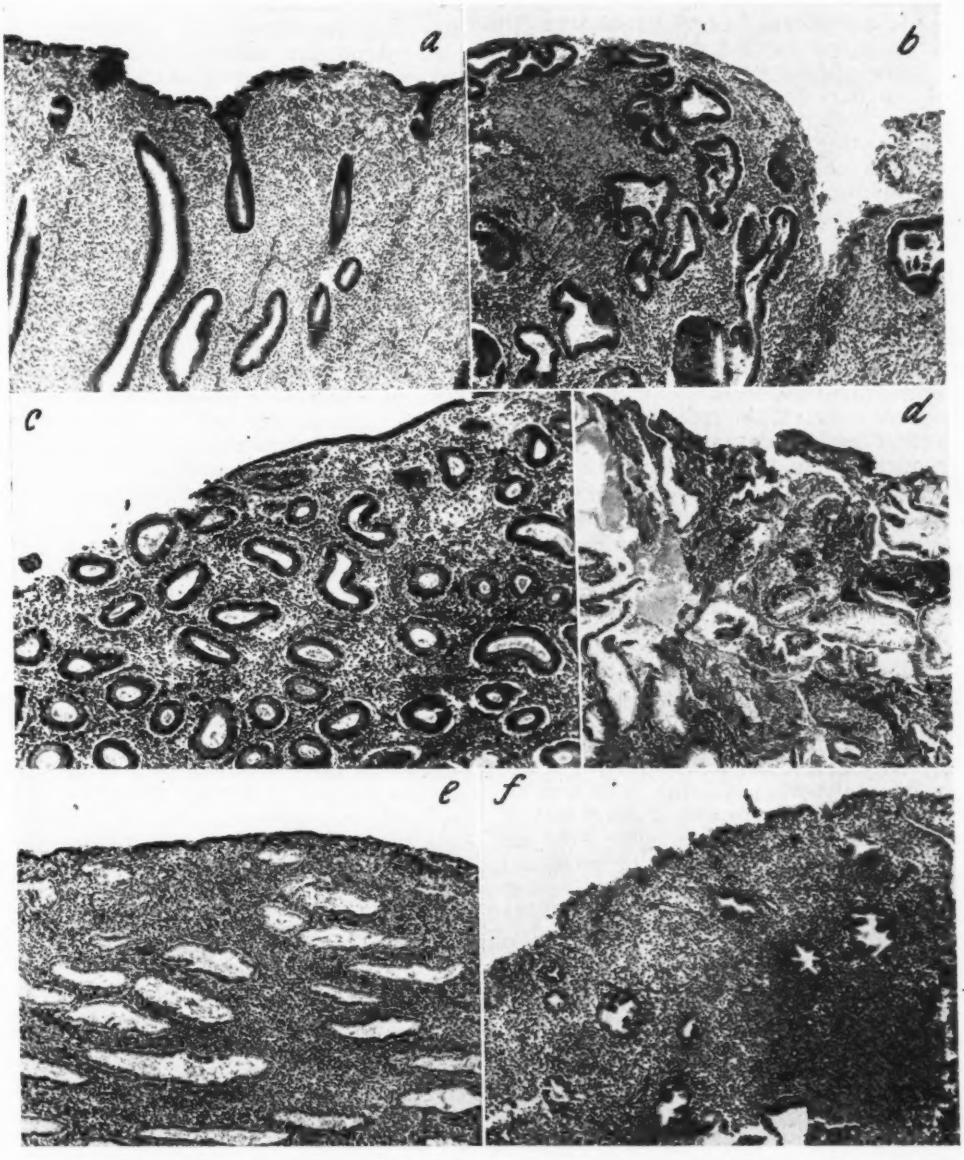

FIG. 1a. Early proliferative endometrium of about the seventh day of the cycle. Note the incomplete regrowth of the surface epithelium.

b. Late proliferative endometrium. Note that the glands are markedly tortuous. The round cell infiltration, lower right, is physiologic.

c. Sixteenth day secretory endometrium. Note the basal vacuolization. Under high power it is possible to make out frequent mitotic figures.

d. Nineteenth day secretory endometrium. Note the marked beginning edema of the stroma. The secretion seen within the gland lumina is glycogen.

e. Twenty-third to twenty-fourth day endometrium. Note that the nuclei of the gland cells are lined up evenly at the basement membrane.

f. Early menstruating endometrium. The stroma is markedly infiltrated with leukocytes.

mouths represent the point from which repair of the surface epithelium must ensue. There are many variations in the thickness of the endometrium, which is a result of the variations in degree and type of menstruation. In some women there may occur as much as a two-thirds loss of endometrium, while in others the predominant change is an involution of the secretory endometrium, with only a minimal loss of tissue from the upper one-third of the endometrium. The basal layer undergoes little cyclical change except during the secretory phase. This basal layer does not undergo any desquamation during the actual bleeding period, since regeneration must begin at this point. Any change undergone by the basal layer at the time of menstruation is in the form of involution only.

The glands of the early proliferative phase are straight or slightly tortuous. The cells are tall columnar in type with the nuclei showing pseudostratification. This term means that the cells are arranged in a single layer, but with the nuclei occupying varying levels within the cell boundary and presenting a stratified appearance. Mitotic figures are frequent.

The stroma also manifests growth, characterized by the presence of many mitoses. The cells are somewhat stellate in shape and are composed almost entirely of nuclei. Cell boundaries are poorly defined. The stroma is somewhat edematous.

Lymphocytes are frequently seen in these sections and are present chiefly in the middle and basal layers. They are seen as focal accumulations. It is important to bear in mind that these accumulations of inflammatory cells are normal and are not indicative of endometritis. Only when plasma cells can be identified in endometrium is a diagnosis of endometritis warranted. Phagocytic cells are frequently seen at this stage of the cycle and merely represent a leftover of the recent menstruation. The function of these cells is obviously the removal of old blood and cellular debris.

The midproliferative phase presents no unusual picture as compared to the early phase except for continued evidence of growth, that is, mitotic activity both in the glands and stroma. The endometrium may appear somewhat thicker and the surface epithelium may show a beginning undulation as a result of the continued growth within a limited space.

The late proliferative phase shows an increasing undulation of the surface epithelium with an increase in length and tortuosity of the glands. The edema of the stroma, previously noted, is now becoming reduced and the stroma presents a more close-packed appearance. Some secretion is present in the lumina of the glands, but this is a mucinous material devoid of glycogen (fig. 1b).

The progestational phase of the cycle begins on the fifteenth day of the perfect twenty-seven day cycle. There are no characteristic changes to denote the fifteenth day, but the presence of such a date is predicated on the assumption that ovulation occurs fourteen days plus or minus two days prior to the onset of the next expected menses. Obviously, whatever changes in the endometrium are induced by the new corpus luteum's secretion, progesterone, would not appear immediately, and in fact as much as from thirty-six to forty-eight hours may transpire before such changes occur.

On the sixteenth day there occurs the first evidence of secretion in the form of an irregular vacuolization of the cytoplasm of the gland cells. This is a basal vacuolization, with the nuclei being pushed toward the surface of the cell (fig. 1c). Mitotic figures, both in the glands and the stroma, are still prevalent. The stroma is unchanged except for beginning accumulation of edema fluid.

The seventeenth day is characterized by a marked increase in the vacuolization of the gland cells. A few mitotic figures are still present. No secretion is seen within the gland lumina and no further changes in the stroma are noted. Some pseudostratification is still present.

The eighteenth and nineteenth days show little variation and are considered together. There is noted a beginning lining up of the nuclei of the gland cells with clear areas appearing in the cytoplasm both above and below the nucleus. However, the nuclei are now being pushed downward to the floor of the cells. The edema is increasing and mitotic figures are now absent. The absence of mitoses is an important aid in differentiating this period from the sixteenth day because in both instances irregular vacuolization is present. In addition, on the eighteenth and nineteenth days, there can be seen beginning secretion collected in the gland lumina (fig. 1d).

From the twentieth through the twenty-second day the characteristic findings are chiefly in the stroma. The edema fluid is marked in quantity. Only an occasional vacuole is seen in the gland cells. The gland lumina are distended with secretion. However, active secretion stops at this point because the peak of corpus luteum function (in the absence of pregnancy) is reached at the twenty-second day. This has been shown by

the corpus luteum studies of Brewer[1] and confirmed by Rock and Hertig.[4]

It is of interest to know that implantation of the fertilized ovum occurs on about the sixth day of the pregnancy,[3, 6] and this is closely associated with the beginning of the edema stage of the progestational phase. Presumably the edematous endometrium would be easier to invade by the early trophoblast. The coincidence of secretion from the seventeenth to the nineteenth day may be due to the fact that the blastocyst enters the uterine cavity from the tube on the third day of the pregnancy[4] and is able to derive its nourishment from the secreted glycogen of this period.

On the twenty-third day there is seen the first evidence of the so-called predecidua. It is, of course, a change of the stromal cells and is seen at first immediately beneath the surface epithelium and adjacent to the spiral arterioles. The stromal cells become swollen and cell boundaries can be distinguished. The nuclei are enlarged and vesicular in appearance. The edema is now disappearing. In addition, there is seen a reappearance of the mitotic activity in the stromal cells, which Dr. Hertig has referred to as the "secondary mitotic phase of the predeciduum." The twenty-fourth day is only an accentuation of the twenty-third day with the glandular cells showing secretory exhaustion. In this state the nuclei are lined up evenly at the basement membrane of the gland cells and the edema continues to decrease (fig. 1e).

On the twenty-fifth day there is noted an infiltration of the stroma with lymphocytes and the edema is absent. The predecidual reaction is increasing from this point through the twenty-seventh day, and in addition there is a marked increase in the tortuosity of the glands to the point of serration. On the twenty-eighth day there is an infiltration of the stroma with polymorphonuclear leukocytes; some clumping of the stroma is present, indicating necrosis; and in some areas actual hemorrhage is seen. This heralds the onset of the next menses (fig. 1f).

DISCUSSION

The practical importance of endometrial dating is easily recognized when it is known that many endometrial biopsy specimens taken on the first day of the menstrual flow, for reasons of sterility, present a picture similar to what has been described as twenty-second or twenty-third day or other immature progestational endometrium. Since the endometrium mirrors what is going on within the follicle and corpus luteum of any one cycle, such a picture of immature secretory endometrium would indicate a poorly functioning corpus luteum. The cause for the poor corpus luteum lies much more deep seated, probably within the pituitary gland itself.

If it can be established, using the above outlined criteria, that the patient under study produces only poorly functioning corpus luteum, the physician may be justified in providing replacement therapy in the form of progesterone to the woman anxious for a pregnancy. In all probability this person is capable of becoming pregnant but spontaneously aborts without missing a period because of the poor bed in which nidation must take place. Of course, therapy must be given in expectation of fertilization and must begin prior to the next expected period. It may be well to add that progesterone therapy as ordinarily given is inadequate in amount. Dr. George Van S. Smith of the Fearing Research Laboratory estimated, on the basis of studies made by Dr. Olive Watkins Smith and himself, that the normal corpus luteum produces a minimum of 50 mg. of progesterone daily. It would appear that a minimum dosage of 25 mg. daily beginning on the twentieth day of the cycle would be necessary in order to expect any value from progesterone therapy.[8]

SUMMARY

1. Endometrial dating is offered as an adjunct to studies of sterility and menstrual disturbances.

2. Criteria for dating endometrium are detailed with particular emphasis upon the secretory phase of the menstrual cycle.

3. A method of treatment for the woman who apparently produces only immature secretory endometrium is suggested.

I should like to express my appreciation to Dr. A. T. Hertig for his permission to present this material, since it is based upon and modeled after his work. In addition, Dr. Hertig generously made many suggestions pertinent to this particular presentation. I should also like to thank Dr. Charles T. Ashworth for his permission to use material from the Pathological Department of Parkland Hospital, Dallas. In addition, I wish to thank Dr. William F. Mengert for his encouragement in the preparation of the paper.

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ABSTRACT OF DISCUSSION

Dr. Karl John Karnaky, Houston: Dr. Blend describes the normal endometrium during the entire cycle. He also speaks of the presence of lymphocytes and polymorphonuclear leukocytes, indicating that this is not to be diagnosed as endometritis. It has been my observation that a physician who will diagnose endometritis other than with an incomplete abortion has apparently not kept up with the studies on endometrium. There is some question whether or not basal vacuolization is indicative of progesterone. These data are being checked by kymographic tracing and basal body temperature records.

He states that the cause of the poor corpus luteum lies within the pituitary gland. The experiments on rabbits and monkeys do not bear that assertion out in that if all except one ovum are destroyed by coagulation while the pituitary gland is still functioning normally, the one remaining egg does not develop. If small doses of estrogen are given, even though the same amount of pituitary is present, this one egg develops to maturity and ovulates. Also, if small doses of estrogen are given to a pseudopregnant rabbit, the corpus luteum becomes identical in every way to that of a pregnant rabbit. It has been shown that if certain fish are caught after they have laid their eggs and their ovaries are sprayed with estrogen, they will swim back and lay another set of eggs.

It is clear from the mass of research that the ultimate control of ovarian development is exercised by the anterior pituitary gland, but how many different secretions of this gland are involved is not yet certain, as indicated by studies of Bullough* in 1939, 1942, and 1943. He expressed the belief that there are at least two separate factors exerting influence on the ovaries. It seems that the main function of the follicular stimulating hormone of the anterior pituitary gland is to stimulate the follicular wall, probably the theca interna (Mossman,† 1937; Corner,‡ 1938), to secrete a certain low concentration of estrogen, some of which is deposited in the follicular cavity and some of which is carried away in the blood stream. The concentration of estrogen in the follicular cavity induces growth of the follicles and, after ovulation, the changes in the germinal epithelium and development of the corpus luteum. The production of estrogen slackens, and the mitosis of the ovarian cells is greatly reduced. Luteinization then takes place by the action of the estrogens. This is apparently true because mitotic activity is more active where the cells lie in direct contact with the liquor folliculae. Further out from the follicular cavity there is less mitosis. Bullough has been able to stimulate follicular development by placing estrogen directly on the ovaries. I am at present experimenting with doses of diethylstilbestrol in oil. This oil is being injected through the tubes to and around the ovaries in menstrual disorder and sterility cases.

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It has been found at the Jefferson Davis Hospital, Houston, by kymographic tracings, by endometrial biopsies, and by basal mouth temperatures that if 0.05 to 0.1 mg. of stilbestrol is given daily for from three to six months in sterility cases in which the woman has poor secretory endometrium, a normal well developed secretory endometrium will form. No progesterone is advocated in any condition that I know of in obstetrics and/or gynecology.

TRAUMA AND INTERRUPTION OF PREGNANCY

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It is common belief that a misstep, a fall, an automobile ride, a jolt while riding on a train, or coital trauma may induce miscarriage.[31, 39, 50] In the absence of antecedent physical injury, emotional disturbance sometimes is invoked to explain the abortion. Since the relationship of various types of trauma to abortion is not well understood, a reevaluation of the subject is desirable.

COITUS

For centuries there has been tacit acceptance of a cause and effect relation between coitus and abortion. Hippocrates[23] expounded the belief. Two thousand years later Menge[30] supported it. Pinard[33] added the idea that repeated intercourse predisposed to abortion more commonly in primigravidas than in multigravidas. Borras[6] concurred in this opinion and suggested that the greater frequency of intercourse and generally smaller vaginas in the former might account for the difference. Howard Kelly[26] regarded excessive sexual activity as harmful, especially at a time when the menses might otherwise be expected. Bumm[8] advised sexual continence during early pregnancy. Baisch[2] recommended abstinence from coitus during the first and third trimesters. Williams[52] believed accidental rupture of the membranes resulting from coitus during the latter part of pregnancy was not uncommon. A. Meyer[29] showed experimentally that repeated sexual intercourse disturbed the normal metabolic relations between the corpus luteum and the implanted ovum.

On the contrary, Taussig,[48] Dickinson,[13] and Burch[9] observed little harm from coitus in early pregnancy, but agreed that in rare instances it might produce threatened abortion. Even so, they were inclined to believe that bleeding and coitus were usually coincidental. Invariably the embryo has undergone degenerative changes days before vaginal bleeding occurs.[21] Diddle[14, 16] studied

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the relationship between spontaneous abortion and coitus in 85 gravid women and concluded that occasionally it produced threatened abortion, but not premature birth. Some primitive tribes customarily forbid sexual intercourse with pregnant women.[53] On the contrary, continence during pregnancy is rare among civilized people.[3, 41, 43]

In order for coitus to cause premature delivery there must be immediate injury to the pregnancy such as disturbance of the placental site, rupture of the amniotic sac, or initiation of expulsive uterine contraction through the sympathetic adrenal system. Injury of this caliber is uncommon but certainly does occur in rare instances. For example, Diddle[15] observed 2 nonpregnant women with severe lacerations of the vaginal vault and collected reports of 131 others reputedly sustained during coitus. Nevertheless, it may be safely concluded that in general sexual intercourse does not interrupt pregnancy. Few pregnancies would carry to term if this were untrue.

TRAVEL

Many physicians believe travel increases the incidence of premature delivery, yet there is no supporting clinical study. Seitz[45] quoted Zweifel's experience with 100 abortion insurance claims. Forty-nine were attributed to falling accidents, horseback riding, traveling in rough-riding wagons, and riding in automobiles at high speed. Interruption of pregnancy was accredited principally to increased intra-abdominal pressure. Bumm[8] customarily interdicted horseback, bicycle, and wagon rides and long train trips. Williams[52] believed long automobile rides led to physical exhaustion and were a factor in premature labor.

Beginning with Mall and Meyer's[28] studies of aborted fetuses, a more realistic view began to prevail. The demonstration that abnormality existed in a majority of early abortuses led physicians to question the causal relationship between travel and abortion. In 1943 Hertig and Sheldon[22] investigated the cause of 1,000 spontaneous abortions. In only 1 instance was onset attributed to an automobile accident. The patient experienced uterine cramps five hours, bleeding twelve hours, and abortion nineteen hours, after the accident. In 1944 Diddle[14] studied 289 pregnant women who journeyed and 467 who did not. The percentage of abortion among each group was 5.6 and 17.9 respectively. Thus the sedentary women experienced more than 3 times the rate of abortion in the travelers. Careful analysis of all the factors involved suggested that neither the distance covered, the method of travel, nor the time of month produced significant difference in the incidence of untimely birth. Transportation alone did not predispose to abortion except in 1 patient who rode a motorcycle a few hours previously. Beach,[4] after studying 337 pregnant women who did not travel as opposed to 341 who did, concluded traveling was not harmful to the majority. During the last twenty-one years more than 17,000 pregnant women traveled to the University of Iowa Hospitals by ambulance, car, or train from various communities in the state. The majority made the trip in the last month, and in no instance did onset of labor occur as a direct result of travel.

More recently, a question concerning the advisability of airplane travel is frequently raised. Greenhill[18] was impressed, as most obstetricians have been, that airplane travel produced no untoward effect on pregnancy. Shillito[46] recommended that air travel be planned with discretion after the eighth month of pregnancy. Interruption of, or danger to, pregnancy from mechanical causes or from effects of rarefied atmosphere are the only possible objections to airplane travel by pregnant women. From the standpoint of minor injury, the airplane is less dangerous than the automobile or train. Perhaps retching from airsickness might constitute sufficient trauma to induce uterine contractions, but this is unlikely. Unfortunately, there is a dearth of factual information relating to decrease in either atmospheric pressure or of oxygen supply. Decrease in oxygen supply has not been studied with relation to possible interruption of pregnancy. In the absence of experimental evidence, it must be assumed that decreased availability of oxygen at levels of ordinary commercial flying is unlikely to influence the fetus. Until experimental proof is forthcoming, it would seem safe to assume that the fetus in utero will tolerate any oxygen deficit that does not seriously embarrass the mother.

It may be concluded that travel in modern conveyances seldom if ever initiates interruption of pregnancy unless intrinsic and extrinsic factors are already in action. Apparently certain women will experience abortion or premature labor whether they remain at home or travel. The principal argument against traveling during pregnancy involves the possibility of hastily mobilized obstetric care in the unlikely event of coincidental abortion or premature labor.

INJURY

The Assyrians recognized trauma as a cause of miscarriage. The Code of Ham-

murapi[20] about 725 B. C., stated: "If a man strike a man's daughter and bring about a miscarriage, he shall pay ten shekels of silver for her miscarriage. . . . If that woman dye they shall put his daughter to death." Thomas Raynalde in "The Byrthe of Mankynde" (1542 edition) quoted by Ricci,[37] said: "Aborcement may happen by over much strearynge of the bodye in laborynge, daunsying or leaping, or by some fall or thruste agynst some wall or beatynge." In the Avicenna (III, XXI, 212) and Rhases (Contin. VII, 2) quoted by Ricci[37] leaping from a height was recommended in order to produce abortion. In 1793 Soemmerring[47] believed that compression of the abdomen by tight petticoat strings and corset stays predisposed to abortion. According to Jonathan Wright,[53] the Gilbert Islanders and Fijians practiced abortion by pounding the abdomen of the gravid woman with stones. However, unless infection occurred, these methods usually failed. Rizzacasa[38] reported a case in which trauma produced placental separation and led to premature delivery.

Another common misconception involves the notion that raising the arms high over the head, as in reaching for objects on a high shelf, will produce miscarriage. The great German obstetrician Bumm[8] so late as 1922 cautioned against excessive indulgence in sports involving stooping and lifting. Perhaps a belief that intra-abdominal pressure may be thereby increased is behind the notion. Seitz[45] pointed out that the maximum effect of intra-abdominal pressure from hard work and lifting was likely to occur in the first four months of pregnancy. On the other hand, he was impressed by the fact that gravid women who were in train accidents or suffered beatings, electric shock, or burning did not miscarry any more readily than those unexposed to trauma.

It is evident that these old beliefs were founded on insufficient evidence since it is well recognized that the pregnant woman may sustain frightful injury, in some instances leading to death, without interruption of pregnancy. Documentation of this statement follows: Churchill[10] gave the experience of Mauriceau, who treated a woman after she had a severe fall in the seventh month of pregnancy. She suffered fracture of her forearm and considerable bruising but fulfilled the period of pregnancy and was delivered of a living child. Churchill also mentioned Davis' patient who was thrown from a horse and much bruised when three to four months pregnant, yet carried to term. Plass's patient,[34] a woman four months pregnant, did not abort after seven rigorous bimanual massages administered on consecutive days by a professional abortionist. According to Page,[31] Gurlt recorded 7 cases of fracture of the humerus and femur of the infant in utero without interruption of pregnancy. Schaeffer[42] gave the results of a train wreck where several pregnant women did not abort even though they suffered fracture of the ribs, contusion of the gravid uterus, and so forth. Schumann[44] saw a woman with multiple fractures of the skull and pelvis and laceration of the urinary bladder with no effect on the pregnancy. Watts,[51] after thirty years of experience with traumatic surgery, regarded abortion and injury as coincidental. Griffith[19] concurred in this idea.

Two reports illustrate the terrific beating a pregnant patient can take. In the first instance, there was generalized injury without interruption of pregnancy. In the second, punishment, specifically directed at the uterus, tardily produced premature labor, probably through production of partial placental separation.

CASE REPORTS

CASE 1.*—A 19 year old woman was severely beaten, choked, and thrown from an automobile by the estranged father of her unborn child. Five days later she died and was examined portmortem. Many wounds and marks of injury were distributed over the body. There were blue and livid areas of discoloration over the upper extremities, outer aspect of both thighs and legs, left inguinal region, both buttocks, soles of the feet, left iliac crest, and sacrolumbar area, above the angles of the scapulas, around the left nipple, and from the lower quadrant of the right breast to the umbilicus. The lower lip was swollen and split. The right ear was torn with a break in the scalp 2.5 cm. long. Many small hemorrhages were found over the prominences of the convolutions of half of the brain. A hematoma 1 by 1.5 cm. was found in the left parietal lobe. Hemorrhages were present underneath the capsule and in the pelvis of the left kidney. Lobular pneumonia was confined to the right upper lobe.

The uterus extended 3 cm. above the umbilicus and contained a normal male fetus measuring 35.2 cm. in length. There was no maceration of the fetal skin and the amniotic fluid was clear. The placenta and its area of attachment were normal.

CASE 2.—A married woman admitted to Parkland Hospital, August 1, 1946, had been pounded on the abdomen two weeks earlier by her husband in an attempt to terminate pregnancy. This treatment produced scanty vaginal bleeding which continued for twelve days, when the membranes ruptured. Two days later, or fourteen days after injury, spontaneous delivery of a live infant weighing 4 pounds occurred. Careful examination of the placenta disclosed no abnormalities.

In spite of the negative physical findings, it appeared that trauma was sufficient to produce some placental separation or damage to the membranes that led to delivery.

*This case is reported through the kindness of Dr. M. P. Neal, professor and chairman of the Department of Pathology, Bacteriology, and Preventive Medicine at the University of Missouri.

The popular belief that trauma is often a principal factor in abortion is untenable when it is realized that shocking physical insults usually do not cause premature delivery.[44] Datnow's[11] conclusion that something more fundamental than trauma is involved appears logical when consideration is given to the ease with which some women abort after trivial shock, while others endure the grossest manipulation with impunity. It is probable that external mechanical stimulus or trauma, unless sufficiently severe to produce internal hemorrhage or placental detachment, will not inaugurate labor. Moreover, Pazzi[32] believed trauma accelerated a process already in action. It is hardly a satisfying explanation to speak of the "irritable uterus" when the fundamental causes of abortion are recalled. Some abnormality in the fetus or membranes usually accounts for premature termination of pregnancy.[9, 24, 27, 40, 48]

In summary, it may be concluded that (1) severe injury, directly damaging the pregnancy, will produce abortion; (2) when some intrinsic pathologic process, already present, is operating to terminate pregnancy subsequently, injury may accelerate it; and (3) the vast majority of injuries sustained by pregnant women produce no deleterious effect whatsoever on the pregnancy, or the product of gestation.

SURGICAL OPERATIONS

Undoubtedly surgical anesthesia and certain operative procedures, even when relatively minor, occasionally initiate labor. On the other hand, the great majority of operations do not interrupt pregnancy. This fact is so well known that essential operations are performed with little regard for pregnancy. As a possible exception it is preferable to remove ovarian tumors after the third month of gestation when the endocrine function of the placenta is established, since otherwise the corpus luteum of pregnancy may be in the extirpated mass. Emergency operations, of course, are performed upon indication at any time. As an example of what the pregnant uterus will tolerate, Litzenberg[27] removed a wishbone pessary from the cavity of a pregnant uterus. Neither the pessary nor its removal disturbed the pregnancy. Berkley and Bonney[5] frequently did myomectomy as late as the thirty-fourth week without interruption of the pregnancy. Reis and Sinykin[36] performed myomectomy in 18 pregnant women with but 2 miscarriages. Bumm[8] was impressed by the amount of operative work tolerated by the genital tract without interruption of pregnancy.

Excluding infection, the essentials of a good pelvic operation on a gravid patient are careful handling of the uterus, good hemostasis, and prevention of cooling and drying of the uterine surfaces. In other words, temporary exteriorization of the gravid uterus in order to facilitate operation is to be avoided.

PSYCHIC SHOCK

Irving[25] pointed out that minor psychic trauma sometimes precipitated premature labor. According to Rock[39] and Williams,[52] abortion occasionally follows emotional excitement such as fright, anger, and grief, particularly if predisposing factors are present. Excitement increases the medullo-adrenal reaction allowing contraction of the smooth muscle of the arterioles including those underneath the nidatory site. Therefore, it seems possible, theoretically, for fear and anger to predispose to abortion, but clinical observations offer little, if any, confirmation of this view. Among Zweifel's reports of abortion,[45] 11 per cent were ascribed to psychic shock. Emotional disturbance antedated abortion and was the only recognizable factor in 1.6 per cent of patients seen by Abernetty.[1] In the train collision described by Schaeffer[42] several pregnant women saw that a wreck was imminent. Some of these women aborted later, while those failing to recognize the approaching danger did not miscarry despite injury.

Seitz[45] said bombardment of Strassbourg in 1870 produced many abortions probably through fright. Bouvocque[7] cited the experience of caring for 92 women uninjured after a powder mill exploded in Grenelle and either aborting or threatening to abort. Contrary to these impressions, the bombing of Hiroshima had no appreciable psychic effect on the interruption of pregnancy.[12] Moreover, the impression was gained, although accurate figures were unavailable, that abortions were no greater in London during than before the bombings of World War II.[49] Increased intra-abdominal pressure is probably the important etiologic factor in explosions, rather than emotional disturbance.

COMMENT

Disturbances of traumatic nature must produce separation of the placenta, interfere with its blood supply, rupture the membranes, or activate the neuromuscular mechanism of uterine evacuation locally or centrally[39] in order to produce abortion. Onset of signs and symptoms of abortion or premature delivery, or actual expulsion of the fetus, must follow injury within twenty-four hours in order for a causal relationship to exist.[17] If abortion follows between twenty-four and

forty-eight hours after trauma, in my opinion the relation between the two is dubious, and after forty-eight hours it can be disregarded.

REFERENCES

EDITOR'S NOTE: Because of the length of the list of bibliographic references for this paper, it has been impossible to publish it here. Reprints of the article obtainable from the author will include the list of references.

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ABSTRACT OF DISCUSSION

Dr. William M. Gambrell, Austin: I am sure everyone doing gynecology, either as a specialty or along with other work, has many times had to deal with an interruption of pregnancy for which he could give no cause, and in many instances possibly each of us has assigned trauma in some of its various phases as the causative factor for the interruption of pregnancy.

Dr. Diddle takes up first the question of trauma derived from coitus as it may relate to the interruption of pregnancy. He cites authorities indicating that harm from coitus may result in some degree to the pregnant uterus at various stages of pregnancy. However, he presents statements from competent men, the study of whose opinions leads him to express the conclusion that in general coitus does not interrupt pregnancy. I think for the most part this is the correct view. Certainly the fact that intercourse is generally indulged in during pregnancy should in no way be regarded too seriously as a frequent etiologic factor in the interruption of pregnancy if at all. Even if it should be assumed that coitus is the cause of frequent or infrequent interruption of pregnancy, it would be hard to prove it.

What relationship travel may have to the interruption of pregnancy, I do not know. Dr. Diddle's personal studies are enlightening, as are the statistics quoted by him relative to the University of Iowa. I have no recollection of any case in which I have even suspected that airplane or train travel might have had anything to do with the interruption of pregnancy. My impression about car travel may be entirely wrong. For many years in dealing with women who, I think, have made no effort whatsoever to interrupt pregnancy and who, I think, desired a continuation of pregnancy, I have encountered a number of cases of interruption following car rides of various distances within a period of from one to three weeks. The occurrence of interruption has not always been soon or sudden after the car ride, but a few days after the car ride the women experienced a small amount of bleeding or heaviness in the pelvis followed in a short while by brownish discharge and later the usual classical signs of interruption. I have believed that if the car riding is the causative factor, the interruption is due to the marked pelvic congestion that develops from sitting with the buttocks low and the knees high, further aggravated by the up and down riding over what might be called the waves in the roads. Rarely will travel in the last month of pregnancy be followed by interruption; however, 1 patient two years ago making about a 200 mile trip to remain in Austin the three weeks prior to her expected time of delivery went into labor and delivered a couple of hours after arriving in Austin, but 1 case proves nothing.

Dr. Diddle has covered the question of injury as related to interruption of pregnancy thoroughly and has cited some interesting case reports. I think it is rather generally concluded that it is not frequent to find a case of interruption which can be proved to be caused by violence or trauma from external sources.

It would be concluded from Dr. Diddle's discussion that psychic shock may be more causative than physical trauma. In regard to trauma associated with surgical procedure the circumstances at the time of the operation, as well as the operation itself, have a great deal to do with determining whether interruption does or does not follow. All of us, I am sure, have seen interruption following a simple appendectomy and have seen it fail to occur in some rather difficult procedures. Sometimes factors relative to the period of gestation make this discrepancy understandable. In other cases I believe the cause of interruption cannot be explained except on the basis of shock to a patient who does not tolerate shock as well as others might.

MANAGEMENT OF THE PARTURIENT

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The management of the parturient begins the day the pregnant woman presents herself to the doctor for diagnosis of her case, and ends with the delivery of the product of conception. It is evident that a paper of this type cannot begin to cover all that is to be said about the management of the pregnant woman; I will therefore confine myself to a brief discussion of prenatal care and the management of the first and second stages of labor.

The objects of prenatal care are to conduct the mother through her pregnancy in such a manner that she will be a healthy person at the end of her ordeal and also give birth to a normal living child. These objects can be attained only by diligent work on the part of the physician and a cooperative patient.

PRENATAL CARE

When the prospective mother first presents herself to the doctor, he should make every effort properly to diagnose the case because it becomes embarrassing to both doctor and patient to find after several months of prenatal care that the patient is not pregnant. A complete history is taken and any abnormalities in family history, past personal history, or menstrual history are recorded. A detailed history of all previous pregnancies and deliveries is often important to the attending physician. Next, a complete physical examination is made. It is my custom to make a pelvic examination first so that a diagnosis of pregnancy can be established before the patient is subjected to further tests. Pelvic measurements are then made, and if there is any evidence of a contracted pelvis, these measurements are repeated during the last month of pregnancy. The remainder of the physical examination is done, and the date of confinement predicted. The patient is sent to the laboratory for urinalysis, complete blood count, blood

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typing, Rh determination, and serologic test for syphilis. Following this the patient is given her general instructions and a booklet on prenatal care; she is told that she is expected to present herself for routine examination every three weeks for the first six months of pregnancy, and every two weeks thereafter. These routine visits are for check-up on blood pressure, urinalysis, weight gain or loss, and general interrogation for eliciting any symptoms of complications. She is also told to see her dentist at least twice during pregnancy for correction of any defects which might occur.

My patients are routinely given vitamins, iron, and calcium to supplement their diet. Vomiting of pregnancy, in a large percentage of cases, is controlled with parenteral administration of vitamins B_6 and B_1. Cases of threatened abortion are treated with bed rest, sedation, ovarian hormones, and vitamin E (with doubtful results). Various and sundry other symptoms which develop during pregnancy must be treated symptomatically. During the last trimester, toxemias are more likely to occur and should be watched for closely.

It has been proved that proper prenatal care has done more to reduce maternal and fetal mortality than any other one factor; therefore, it is of utmost importance that those who do the majority of obstetrics become more aware of this fact and carry out those relatively simple procedures which mean so much to the patients.

MANAGEMENT OF LABOR

The first consideration in the management of the first and second stages of labor, and one of utmost importance, is that of asepsis and antisepsis of the surroundings, the patient, and the attendants. There is a sharp distinction between hospital and home obstetrics, and I am convinced that the safest place for delivery of a baby is in the hospital. Here only can the physician find all the necessary elements for an operative technique and the help of well trained assistants. The procedures necessary for the proper conduct of normal labor cases, not to mention the abnormal cases, can be carried out so much better in the hospital than in the home that physicians should all hope to see the day when every woman will have the benefits of a hospital confinement. However, a large number of births still occur in the home and will continue to do so for many years to come. In delivering those patients who of necessity do remain in their homes, the attending physician should so prepare himself and his equipment that he will be able to conduct labor in a satisfactory manner. If the practice of obstetrics is ever to attain the dignity of surgery, and the parturient is to have the same benefits as the surgical patient, the makeshift policies of obstetric practice must be abolished.

Asepsis and antisepsis of the patient should begin as soon as the first stage of labor begins. (1) She should have a shower bath; (2) complete preparation should be made by shaving the lower abdomen, the inner surface of the thighs, the vulva, perineum, and buttocks; (3) all of these parts should be scrubbed well with soap and water; and (4) a warm soap suds or soda enema should be given. During the course of labor, strict adherence to asepsis should be foremost in the minds and conduct of all attendants. Frequent vaginal examinations are poor obstetric practice and should not be done; most of the time a rectal examination will reveal all that is needed to be known during the course of a normal labor. When vaginal examinations are done, they should be done under strict aseptic technique. General practitioners should be even more conscious of their conduct during the handling of a labor case than are the specialists because their daily rounds bring them into contact with more infectious and contagious diseases. It is true that the use of drugs such as the sulfonamides, penicillin, and streptomycin have reduced the morbidity and mortality rate of puerperal infections; however, these drugs afford no excuse for ignoring the principles and practice of strict aseptic and antiseptic techniques.

The physician's first visit to the parturient after labor begins should be preceded by a check-up of her prenatal history and physical findings. This in itself will assist in making the decision as to how this particular patient's labor will be conducted. At the first visit the patient should have a complete physical examination with special attention to the blood pressure, the heart, lungs, and urinalysis. The position, presentation, and condition of the baby should be determined, if possible, by palpation and auscultation. I say if possible, because not infrequently it is difficult, if not impossible, to determine the position and presentation of the baby during the first stage of labor; this is particularly true in the obese and in those who have an excessive amount of amniotic fluid. After the preliminary examination, the physician should give his patient all the psychologic help he can by informing her that everything is as it should be, and she will have her baby without any difficulty. Of course one of the immediate family should be informed if examination reveals any ab-

normality or indication that labor is likely to be abnormal in any respect. There is certainly no need for the patient to know that trouble is anticipated, and a feeling of confidence should be imparted to her.

After labor has progressed to the stage that the pains are hard and regular, the physician must decide what medication is to be used to alleviate pain. There are many drugs which are used for analgesia and hypnosis during labor, some safe and some not. The advent of demerol has given a powerful analgesic which is relatively safe; however, in my experience, there have been cases in which the baby showed signs of a depressed respiratory center due to the use of this drug. The barbiturates have been and continue to be used extensively for hypnosis and basal anesthesia. Demerol in conjunction with scopolamine has given gratifying results in most of the cases in which I have used them. Caudal anesthesia is being used in many institutions with good results; because of technical difficulties, this procedure is not being used nearly so widely as it once was. The decision as to which method to use for the relief of pain and memory of childbirth is a matter of choice, but every woman is entitled to all the relief from pain that she can safely be given and still not cause harm to her baby.

The first stage of labor is a period of watchful waiting for the physician. He must be on hand at all times in order to recognize any condition which might develop unexpectedly. He must recognize any impending danger to the mother or baby and be prepared to take care of any situation which might arise. This stage of the conduct of labor is the most trying to all concerned and is just as important as is the actual delivery.

Asepsis during the second stage of labor cannot be entirely achieved because of the proximity of the vaginal outlet to the anus, and a few of the old antiseptic methods should be used. The physician should have at hand a basin containing an antiseptic solution in which he can frequently wash the gloved hand and with which he can frequently wash the region around the anus. Of course asepsis should be carried out just as though the patient were undergoing surgery. Before attending the parturient during the second stage of labor, the physician should be dressed in a scrub suit, cap, and mask; the hands and arms should be scrubbed with soap and water for a period of ten minutes followed by immersion of the hands in bichloride of mercury or other antiseptic solution for from one to three minutes; and then a sterile gown and sterile rubber gloves should be put on. Before the patient is draped, she is again scrubbed with soap and water, dried with a sterile towel, and all surrounding parts sprayed with an antiseptic solution such as tincture of merthiolate.

The second stage of labor cannot be discussed without consideration of anesthesia. This may be either inhalation, intravenous, or nerve block anesthesia. The choice depends entirely upon the operator and the availability of a trained anesthetist. If there is any doubt about the ability of assistants, by all means the physician should use the anesthesia which allows the greatest margin of safety to his patient. Ether anesthesia is probably the safest of all, but has the drawback that it is not as rapid acting as is desirable; however, used in conjunction with local procaine, infiltration ether gives fair results. It is alleged that chloroform is tolerated better by the parturient than by other patients, and used as an analgesia during the second stage of labor it gives wonderful results; however, because of the danger of possible kidney and liver damage following its administration, it is probably best not to use this agent. Nitrous oxide and oxygen, used judiciously and in trained hands, is an analgesia and anesthetic which gives good results, but it can be a dangerous combination if administered by an incompetent assistant. Intravenous barbiturates such as sodium pentothal are being used with reported good results; however, without the assistance of adequate help, it is advisable to refrain from using this type of anesthesia. Other types of anesthesia being used are caudal, saddle block, spinal, and numerous inhalation agents, all of which are good anesthetics but to be used only by those trained in their use.

Often during the later part of the first stage or the early part of the second stage of labor, intact membranes delay the progress of an otherwise normal labor; in these cases it is wise to rupture the amniotic sac. Multiparas often have a rapid delivery following this procedure, so the physician should be ready for delivery of these women before this procedure is carried out. Other causes of delay in delivery after the second stage of labor is reached often necessitate the use of forceps. It is advisable to terminate the second stage of labor by a low forceps delivery in the event that delivery is not spontaneous within from thirty minutes to one hour after the cervix has become completely dilated.

It is my opinion that all primiparas who are at full term and all multiparas who have a resistant perineum should have an episiot-

omy done. This procedure not only preserves the perineum but also reduces the period of the second stage of labor, thereby reducing the amount of trauma to the baby's head. There is no doubt that occasionally a case of brain injury results in an infant who has been subjected to an excessively long labor; by doing an episiotomy and low forceps delivery on these slow cases, the physician can save the mother and child an hour or more of hard labor. Along this line I would like to condemn the use of oxytoxic drugs during the first and second stages of labor; this is poor obstetric practice.

SUMMARY

Management of the parturient begins with a diagnosis of pregnancy and ends with delivery of the product of conception. It should include a preliminary examination followed by routine prenatal visits to insure the best possible health for mother and child. Conduct of the first and second stages of labor should include consideration of (1) asepsis and antisepsis, (2) diagnosis of the case, (3) prognosis of the mechanism of labor, (4) watchful waiting, (5) relief of pain, (6) protection of the life of mother and child, and (7) preservation of the perineum.

ABSTRACT OF DISCUSSION

Dr. Charles Adna Smith, Texarkana: I wish to endorse all that has been said, especially on the need for regular prenatal visits and strict asepsis in the conduct of labor.

I urge the free use of roentgen ray in the last month of pregnancy when needed to check presentation and position. In prolonged labor a recheck of the measurements and roentgen pelvimetry are of value; also prophylactic use of penicillin to prevent infection is desirable. The aim should be to keep such cases still available for section until it is sure that delivery from below is feasible. The obstetrician must at all times be his own master in conducting his case.

I believe a vaginal examination should always be performed after the membranes rupture to rule out prolapse of the cord.

Regarding sedation, I use mainly seconal and demerol. I am still afraid that a second dose of demerol is a possible cause of asphyxiation in the baby.

I endorse Dr. Smith's remarks about episiotomy and I usually follow it with low forceps delivery.

I think a doctor's sterile delivery table should always supply sterile forceps, a tracheal catheter, and equipment to pack for hemorrhage.

More than 60 per cent of rheumatic disease can be arrested if early treatment is instituted, yet more than 97,000,000 work days are lost each year because of rheumatic disease, more than half the total occurring in families with an annual income of $1,000 or less, reports the Arthritis and Rheumatism Foundation. Rheumatic heart disease is the chief cause of death among children aged 5 through 19, and 97 per cent of all persons beyond middle life develop some changes characteristic of arthritis and rheumatism.

ETIOLOGY OF ECLAMPSIA

EVALUATION OF SOME OF THE MORE RECENT THEORIES

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In the last decade, volumes have been written on the etiology of eclampsia. Investigative work has developed many important side lights, and numerous statistical studies have been published showing the social and economic predisposing factors. Nevertheless, there is still no general agreement upon, nor any definite proof of, the specific etiologic cause of pregnancy toxemia.

This paper will first consider briefly the eclampsia conference held under the auspices of the U. S. Department of Labor, Maternal and Child Health Division, Washington, D. C., January 27-28, 1941. It will then take up some of the more recent theories concerning the etiology of eclampsia and attempt the evaluation of them by determining whether the various supposed answers completely fit into the picture of eclampsia. All references to the conference in Washington will be found in its proceedings, now in the library of the Labor Department, Division of Child and Maternal Welfare.

The conference was not called primarily for anyone to expound his pet theory of etiology, but mainly to consider the practicability of the classification of the toxemias of pregnancy as advanced by the American Committee on Maternal Welfare, and, among other things, to discuss the facts which supposedly were "already known" about eclampsia. It was in the latter discussion rather than in those of symptomatology and treatment that the greatest discouragement was encountered. One fact "already known" to some conferees was not "already known," or at least not admitted, by others. In short, I do not believe the simple fact that eclampsia occurs only in the human female was even mentioned, much less admitted.

THEORIES AT ECLAMPSIA CONFERENCE

However, a few theories as to etiology were ventured. Peters of Yale made a stout denial that there is a circulating toxin in eclampsia. His graphic description of the circulatory changes in severe preeclampsia was most entertaining. No one without earnest convictions could have so eloquently pre-

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sented his theory that eclampsia is solely a "vascular phenomenon" which, without rhyme or reason, may overtake the pregnant woman. I can speak for only myself, but his presentation impressed me, not his reasoning.

The Strauss[10] theory that 15 per cent of the cases of eclampsia are due to salt-water imbalance came in for discussion. It had a few lukewarm believers but they must have been those with an abounding faith in the written word. (However, it must now be admitted, six years later, that Strauss' theory has taken on additional significance. Fuster[1] produced experimentally an eclamptic syndrome in a nontoxemic primigravida by giving intravenously 800 cc. of a 10 per cent solution of sodium chloride.)

George Smith reviewed the investigative work of Smith and Smith, and in substance stated that their studies indicated an estrogen-progesterone imbalance, but he was not ready to state that this was an etiologic factor in eclampsia.

Upshaw of Emory University read the theory of Bartholomew and Colvin of possible guanadine formation in placental infarcts, the theory of placental infarcts as the source of split proteins advanced by Young of Edinburg in 1914, but not original with him. I formerly subscribed to this theory, and in 1927, 1928, and 1929 reported the finding of tyramine in the maternal blood which I presumed came from the infarct. Reason alone soon forced me to leave the fetal portion of placenta and to consider placental tissue common to both the mother and the fetus — chorionic epithelium. If the source of the toxin were in the fetal portion of the placenta, the fetus should have eclampsia more often than the mother. It is now my opinion that a fresh infarction seen in the placenta of an eclamptic mother is a rapid degenerative process designed to keep the toxin from entering the fetal circulation.

I was the only other member of the conference brazen enough to venture a theory. Briefly it was as follows:

The element of pressure in the woman who maintains the upright position may cause such a disturbance in the utero-placental circulation as to result in degeneration of scattered areas of chorionic epithelium. From these areas of degeneration a toxin may form. (Tyramine was found in 1928.[4]) Then, if the intra-ovular and intra-uterine pressure is normal, absorption by the maternal circulation may take place. If the intra-ovular and intra-uterine pressure is reduced by absorption of amniotic fluid following the death of the fetus in utero, or by the rupture of the amniotic sac, or by parturition, absorption by the maternal circulation appears to cease as the patient improves.

Furthermore, in my opinion, eclampsia has no connection with the common placental infarcts. Eclampsia is possible only in the presence of chorionic degeneration, which in turn is due to circulatory deficiency to the fetus. In the most common instance, this deficiency is due to excessive pressure and in the less common instances to (1) the fetus moving away from its blood supply as in molar pregnancy and (2) pathologic conditions in the vessel walls nourishing the pregnancy.

I had Tenney's[11] slides which show marked degeneration of the chorionic epithelium and wanted to show them when I questioned the statement of Dieckmann that there were no significant changes in the placenta in cases of eclampsia. It was evident that there was no great desire on the part of any conference member to see the slides.

Long before the eclampsia conference, and ever since it, I have found no reason for changing the foregoing concepts. The impression gained from these concepts, with some elaboration, will be used as the basic picture for evaluation of theories concerning the etiology of eclampsia. Some of these impressions are not original nor are they stated as absolute facts. However, a long interest in toxemia has led me to give them some factual value.

Eclampsia occurs only in the human female, and she alone of the mammals maintains the upright position. The frequency of varices in the lower part of the body of any human being suggests that there is still imperfect adaptation to this position. This frequency of varices is increased in pregnancy. Eclampsia occurs only in the presence of a placenta or a symptom continuity of hypertension, edema, or albuminuria, from the time of the expulsion of the placenta up to the time of the seizure, which is generally within seventy-two hours. Stander[9] reported 3 cases occurring after seventy-two hours following expulsion of a placenta.

Toxemia occurs more frequently when the element of increased intra-abdominal and/or intra-uterine pressure is present—in advanced pregnancies, primigravidas, oversized babies, twins, and polyhydramnions. The reverse appears to be true: toxemic symptoms improve with a reduction of the intra-uterine pressure.

Another impression tending to show the

connection between the upright position and toxemia is that the facilitation of circulation in the utero-placental sinuses by complete bed rest is followed by decrease in blood pressure, albuminuria, and edema. This is not true when grave damage has been done nor when bed rest includes bathroom privileges and sitting up in bed to eat or read. This impression may be taken advantage of in securing another child in some cases of essential hypertension or residual hypertension due to a former prolonged pregnancy hypertension.

Any theory which gives primary importance to dysfunction of the liver, the kidney, or any other emunctory, or to the hormones of reproduction is inadequate, unbiologic, and is not in accord with "facts already known." If true, it would put the biology of reproduction in reverse. Toxemia of pregnancy should not be explained by a biologic concept but rather, in addition to many predisposing factors, it is more a question of evolution with failure of adaptation to the upright position. Hormonal deficiencies appear to be an effect rather than a cause.

In toxemia of pregnancy, the pressor effect of the toxin produces only hypertension. Sensitivity to this toxin, which is subject to marked individualized variations, produces angiospasm which is clearly seen in severe preeclampsia and must be extensive before eclampsia is possible. I[3] demonstrated this allergy-like phase of toxemia in intradermal tests with dilutions of tyramine.

It was thought for a long time that the pressor effect of the toxin circulating in the blood of the toxemic patient was produced by its action on the vasomotor center and by direct action on the unstriped muscle fibers of the vessel wall. In view of autopsy findings, it is now apparent that, if not stopped by mechanical hindrance, this toxin must have some marked and unpredictable selectivity for certain vessels, especially those in the liver where areas of necrosis are found immediately adjacent to healthy and functioning areas.

For a long time it seemed reasonable to suppose that the source of the toxin causing the clinical symptoms of toxemia might as well be extra-uterine as intra-uterine, but repeated observation of improvement in the patient's symptoms with the reduction of the intra-uterine pressure which follows death in utero and absorption of amniotic fluid, or by rupture of the membranes, is suggestive of an intra-uterine origin. The toxin did not cause the degeneration of the chorionic epithelium which is now present, but rather these degenerated areas are the likely formation places of the toxin and the amount of toxin formed at any one time is dependent on the extent of these areas of degeneration.

There is nothing pathognomonic in the postmortem findings in eclampsia, but instead they are similar to those present in poisoning from any circulating toxin or poison which has a pressor effect. The pathologist should have evidence that a known toxemia of pregnancy existed prior to death before, in the presence of kidney or brain lesions or periportal necrosis, he may give the cause of death as severe pregnancy toxemia or eclampsia.

SMITH AND SMITH THEORIES

Since the conference, Smith and Smith[7, 8] have done an enormous amount of investigative work on the etiology of pregnancy toxemia. Space allows me only to summarize their "theory and synthesis" as published in the January, 1948, issue of *Physiological Reviews*. According to their theory, menstruation is caused by estrogen withdrawal, and in the menstrual discharge there is a necrotizing toxin which is destructive to cells and vessel walls. In pregnancy toxemia, they have generally found an estrogen-progesterone-chorionic gonadotropin imbalance with a notable decrease in the estrogens. With this lack of hormonal support to the pregnancy, especially with low estrogens, a process similar to menstruation may be inaugurated with the formation of a menstrual toxin causing in situ vessel wall, syncytial cell, and decidual cell degeneration. They have in numerous papers stated that this process may be initiated in pregnancy by lack of blood supply rather than hormonal lack, and in some cases there may be a vicious circle set up where it is difficult to determine from whence came the original offense—lack of blood supply or estrogen deficiency. Their most recent reports concerning the use of the pseudoglobulin fraction of the serum of menstruating and toxemic women to neutralize the action of menstrual toxin will not be evaluated as this phase concerns treatment more than it does etiology. However, their reported progress, while immature, appears encouraging, and this may be another instance of discovering not the cause but the cure.

An attempt will be made to evaluate only that part of the thesis of Smith and Smith which concerns etiology. That there is a toxic substance in menstrual discharge has been known for centuries, and it is quite generally recognized in medicine as one of those penalties of civilization inflicted on the female because biologically she has no business menstruating. This has been accepted with grace

by many women who hope to menstruate, but realize that they should not, even though the suffering entailed in menstruation is anything from severe headache on down. The hardships of pregnancy imposed by culture seemed far greater than those of menstruation.

Smith and Smith deserve credit for attempting to determine the nature of this necrotizing toxin through exhaustive studies. However, two all important items are still lacking: (1) definite chemical determinations of the substances contained and (2) most important of all, whether or not any of these substances have a pressor effect. This latter is a basic requirement in the solution of pregnancy toxemia.

I cannot envision any possible connection between the estrogen withdrawals of repeated unbiologic and mildly pathologic menstruations and the presumed primary estrogen withdrawal in a normal and biologic pregnancy. Lengthy reflection fails to produce any connection between the two processes. One is destructive; the other is creative. In the two instances the source of the estrogens is different as well as is the purpose for which they were intended to serve —one to prepare an egg and a nesting place; the other, through its own efforts, to safeguard the pregnancy after nesting has taken place. In this latter instance, the placenta becomes the sole source of production of those hormones essential to the safeguarding of the pregnancy. All that the placenta asks from the host is that it be provided with an adequate and proper blood supply and also that the host will, if necessary, further metabolize and eliminate such quantities and kinds of hormones as are not necessary to maintain the pregnancy.

If the host or landlord affords these advantages to the placenta-tenant, it is difficult to imagine that under these favorable circumstances the placenta-tenant would attempt suicide or deliberately jeopardize the fetus which it is guarding. Certainly it would not naturally and without cause order a "strike" or "walkout" on the part of the steroid producing cells of the chorionic epithelium. However, it is understandable that these same cells might have to capitulate if the landlord or host were unable to furnish through adequate blood supply the necessary materials with which to work. Also, if Smith and Smith are right as regards the cases of primary withdrawal of estrogens not being dependent on circulatory deficiency, the curious will still continue to ask why the placenta in a first pregnancy is more aberratious or more traitorous in risking the life of its charge while the host is young and vigorous than subsequent placentas which, as is well known, guard their charges with much less morbidity and mortality.

Adhering strictly to the theory that pregnancy toxemia is caused by inadequate blood supply to the fetus, I can give Smith and Smith credit for also finding that circulatory deficiency is often the cause of pregnancy toxemia, but I desire to suggest again that hormonal imbalance or hormonal lack is an effect and not a cause. Their studies have enhanced the knowledge concerning menstrual discharge and the information about the metabolism of placental hormones, but, in spite of the extensive documentation they have given their work (twenty-two publications since 1938), the etiology of pregnancy toxemia appears to me to be at the same stage it was when they began their investigations.

HOFBAUER THEORIES

Hofbauer has been a prolific writer on the etiology of toxemia. One who has followed his articles for many years must have found in them much to think about though many conclusions were highly speculative and without conclusive evidence. Mere mention of a few of his articles prior to his latest of April, 1946,[2] will suffice. One of his first papers attributed the cause of eclampsia to upset posterio-hypophyseal-cortico-adrenalin mechanism. A later paper gave as the basic cause an undue pitressin effect. Subsequently he published an article suggesting that histamine was the cause. As far as I know, Hofbauer was the first to indicate that a toxic amine might be involved, and if I am not mistaken, his thesis came out about the same time that the extensive work on the toxic amines was being done at the University of Chicago by Henke and Koessler. One striking characteristic of Hofbauer's articles is that though he can give an up-to-the-minute theory, he is steadfast in interweaving all former theories with the last.

His last paper mentioned above, "The Evolution of the Biologic Concept of the Etiology of Late Toxemia," is rather hard for me to follow. However, the impression gained is that he now involves the thyroid among his pressor producers. Then, by reason of these three pressor producing glands "ganging up" on the acetylcholine forming function of the placenta, production of the latter is seriously handicapped and the great source of vasodilator substance is stopped. He writes of "exposition of the functional aberrations of the placental enzyme system." I do not understand enough about his theory

to evaluate it. Here again, however, I cannot see why the pressor glands "gang up" and the placental enzymes become aberrations more often in the young primigravida than in the older multipara.

LAVAKE THEORIES

LaVake,[5] in an article on "Serology and Obstetrics" in 1946, among other things insinuated that the Rh factor might be concerned in the etiology of eclampsia. This seems just another confusing and purely theoretical factor in the study of toxemia. While the etiology of eclampsia may involve an antigen-antibody reaction, it certainly follows a different pattern than that seen in erythroblastosis. If it were to follow such a pattern, the primipara who develops eclampsia should have toxemia develop earlier in the next pregnancy, which is not the case. Shortly after making inquiry of another investigator who was also interested in this problem, I was sent data on 5 cases of eclampsia in which the blood group and Rh were identical in mother and baby.

LIN THEORIES

Several more theories as to the etiology of eclampsia have been advanced, but only one more will be mentioned—a recent paper "Is Eclampsia an Allergy?" by Lin.[6] This is entitled to comment because it represents some painstaking investigative work in the hope of throwing more light on the antigen-antibody theory. Working with rats, the author used rat placental suspensions as an antigen. Pregnancy in these immunized rats was followed by albuminuria, hypertension, and blood vessel wall changes. Exception must be taken to her statement, "It is a common finding of the obstetricians that repeated pregnancies intensify all symptoms and signs of toxemia of pregnancy." This is true only when permanent vessel wall damage precedes the pregnancy, and even then it is not invariably true. An important check on her work, which was probably done but not reported, would have been the culturing of a part of the placental suspensions at the time of the intraperitoneal injections.

During the last few years there has been a paucity of articles on complete and accurate autopsy findings in eclampsia with special correlation of these findings with the clinical aspects. Way[12] has recently published an article which notably helps to fill this disappointing, even exasperating, vacuum. The etiology of eclampsia as well as the whole field of obstetrics will be retarded unless more pathologists become able and willing to give correlated autopsy protocols on fetal and maternal deaths.

Definite progress concerning the etiology of pregnancy toxemia awaits the assistance of protein chemists and pathologists. Especially needed are the pathologists, unindoctrinated with the pathology of forty years ago, whose refined methods would afford a sharp and emphatic differentiation between the rather sudden circulatory collapse or shock death and the circulatory collapse death of the toxemic patient. The physician must be even more mindful of his responsibility. A mild toxemia may terminate during or following delivery in a circulatory collapse death if all the factors contributing to shock are not carefully considered. The most important of these factors are maternal exhaustion, fear, wrong anesthetic or too much of the right anesthetic, surgical trauma, rapid blood loss, and drug sensitivity.

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ABSTRACT OF DISCUSSION

Dr. William F. Mengert, Dallas: Dr. Johnson has thought and taught along the lines of his paper for many years, and his knowledge and experience command attention and respect.

Zangemeister called eclampsia "the disease of theories," and no man can practice obstetrics without devoting many hours to pondering this challenging mystery. In fact, it has been said no man is truly an obstetrician until he acquires a theory concerning the etiology of eclampsia. The founders of the present Chicago Lying-In Hospital felt so strongly about the importance of the disease that they left a blank space on the capital of one of the columns of the cloister leading to the Mothers' Aid Pavilion. The name of the man discovering the etiology of eclampsia is to be graven there, to record him for posterity as one of the all-time Great Obstetricians.

It would be repetitious for me to detail the pros and cons of the various theories, since Dr. Johnson did that so admirably. Rather, I shall try to summarize a few accepted beliefs in an effort to narrow the field and bring certain facts to focus.

Most obstetricians believe some chemical substance causes the disease. The very name is "toxemia." Moreover, if it is a toxin, it is placental in origin and not fetal, since 3 patients with hydatidiform mole have been reported, during the past

twenty years, to develop eclampsia. Undoubtedly it is basically a vascular phenomenon and related to the hypertensive cardiovascular disease common to both sexes. It is a disease of late pregnancy occurring only in the last trimester and stopping within a few hours after birth of the placenta. The multitudinous pathologic lesions are the result of the disease and not the cause of the clinical manifestations.

Much confusion exists because of improper diagnosis. Almost all obstetricians believe there is a separate syndrome, preeclampsia, with eclampsia occurring only in late pregnancy. All know that hypertensive cardiovascular disease may occur at any time, but many confuse the two diseases. This is easy, since they frequently merge or occur simultaneously. Some would add to the toxemia picture such obviously extraneous phenomena as pernicious vomiting, acute yellow atrophy of the liver, and salivation. How can the etiology of a disease be determined when even its identity remains in doubt?

Moreover, convulsions may result from a number of etiologic factors. Those most commonly occurring with eclampsia are caused by cerebral anoxia, vasospasm, edema, and water intoxication. It is not generally known, but water and salt intoxication, as Dr. Johnson said, often produces convulsions. Thus, overtreatment of the eclamptic patient with salt and water may continue rather than inhibit convulsions. Undoubtedly, late convulsions occurring days after delivery are due to this water and salt intoxication rather than basically to the eclampsia.

I believe that all the facts necessary to the solution of the eclampsia problem, save only the demonstration of the chemical agent, are now in our hands. When a superb obstetric clinician and an excellent chemist "team up," the answer will soon be secured.

PENICILLIN DUST AND RESPIRATORY INFECTIONS

Inhalation of penicillin dust is a valuable treatment for the common cold, chronic sinusitis, bronchitis, bronchial asthma with acute or chronic bronchitis, and pneumonia, report three physicians, writing in the October 2 issue of *The Journal of the American Medical Association*. They are Louis Krasno, M. D., Department of Clinical Science of the University of Illinois Medical School; Paul S. Rhoads, M. D., Division of Medicine, Northwestern University Medical School; and Mary Karp, M. D., Division of Surgery, Northwestern University Medical School, and Department of Anesthesiology, Wesley Memorial Hospital and Passavant Memorial Hospital.

Of 169 patients treated for the common cold, 42 per cent were considered cured. Thirty-eight patients were treated for acute and chronic sinusitis, 41 were treated for acute and chronic bronchitis, and 24 were treated for bronchial asthma with acute or chronic bronchitis. Of these, 13, 17, and 4 patients respectively were freed of symptoms. Four out of 6 patients treated for pneumonia were freed of symptoms. Other patients in the study were treated for various other infections of the respiratory tract.

Penicillin dust often relieves the stuffiness and congestion of a cold immediately, the physicians say. It also reduces the pain of an acutely sore throat within one-half to one hour following treatment in some cases.

The treatment consisted of inhaling penicillin dust one to three times daily. Three to six minutes were usually required to inhale the amount used, and patients were not allowed to eat or drink for one hour after each inhalation. Some of the patients used a plastic mouth inhaler, which reduces the possibility of allergic reactions.

CONTINUOUS CAUDAL ANALGESIA IN OBSTETRICS

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Throughout the ages man has sought diligently for methods of alleviating pain, particularly that pain which is associated with parturition.

The first known clinical application of continuous caudal analgesia occurred on October 10, 1941, being used to relieve pain for an operation upon the lower extremity. This procedure was then used by Dr. Robert A. Hingson, U. S. P. H. S., for the safe control of pain in childbirth. It is to Dr. Hingson that we are indebted for his untiring efforts in perfecting a safe means for control of pain in childbirth.

The obstetric profession as a whole has been slow in accepting this method of pain relief during labor, and we who are employing it, are continuing to meet opposition from our fellow practitioners. Before criticizing this procedure, a physician should take the trouble to see this method used, calculate its advantages as well as its disadvantages, and evaluate it carefully.

PHYSIOLOGIC BACKGROUND

Since caudal analgesia is a form of epidural anesthesia, a consideration of the epidural space is in order.

The epidural space is that portion of the vertebral canal not occupied by the dura and its contents. Superiorly it ends at the foramen magnum where the dura divides into two layers. Within the canal the dura lies in close opposition to the periosteum of the posterior aspects of the bodies of the vertebrae and laterally it extends with each nerve root. Posteriorly it has no connections.

The dural sac with its contents of spinal cord and cerebrospinal fluid almost completely fills the vertebral canal, allowing only 3 to 6 mm. between the ligaments and the sac itself.

There are 58 lateral openings into the epidural space, namely, 8 anterior and posterior sacral foramina, 10 lumbar intervertebral foramina, 24 thoracic intervertebral foramina, 14 cervical intervertebral foramina, and the 2 grooves between the atlas and the occiput. Inferiorly the sacral hiatus opens into the peridural space.

Inferiorly the sacral prolongation of the epidural space is the sacral canal. In normal subjects the dura ends in the canal between the bodies of the first and second sacral vertebrae. The canal varies in length from 3

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to 4 inches. It contains the following structures: the sacral and coccygeal nerves and dorsal root ganglia; the lower end of the dural sac; loose areolar tissue; solidified and partially liquid fat; and lymphatic and blood vessels, the latter consisting mostly of veins representing the lower end of the internal vertebral plexus. It is for this reason that in caudal puncture an effort is made to direct the needle along the roof of the canal to avoid venipuncture.

The epidural space ends inferiorly at the sacral hiatus. This is an oblique opening formed by the failure of fusion of the fifth and sometimes the fourth sacral vertebrae. It lies about 2 inches above the tip of the coccyx usually in midline and in most subjects directly beneath the superior limit of the intergluteal crease of skin.

In about 10 per cent of cases the hiatus is clinically anomalous. These deviations may be in locations, extent, or the related structures. The shape of the opening is triangular, the apex of the triangle being superior. The apical angle varies from 20 to 60 degrees, and its extent is determined by the width of the hiatus. Because of failure of fusion of the third and perhaps higher sacral lamina, in addition to the fourth and fifth, the hiatus may extend a greater distance upward. In some instances it may be at such a high level that the floor of the hiatus will be formed by the second and third sacral vertebra rather than the fourth and fifth. Because of intermittent failure of fusion, additional openings into the sacral canal may exist together with a more or less normally located sacral hiatus. In some cases there may be a complete failure of fusion over the sacral canal beginning from the hiatus to the lumbar epidural space. Bony overgrowths from adjacent structures may entirely obscure the hiatus, a flattened fourth sacral spinous process being the most common offender.

A knowledge of these variations of the sacral hiatus is necessary in order to introduce the needle into the sacral canal of all subjects. Lack of this knowledge is an obstacle to the beginner and is the cause of early failures.

From a consideration of the structure of the epidural space as described, it can be visualized that an anesthetic solution spreads posteriorly up into the space and at the same time extends laterally through the sacral and intervertebral foramina to surround the nerve roots. It first affects the posterior roots by reason of their proximity but soon spreads to the united roots to produce motor effects. The autonomic system is readily anesthetized because of the smaller caliber of its fibers and absence of a myelin sheath. Because of the fibrous curtain over the intervertebral foramina, fluid injected into the epidural space must infiltrate into the nerve roots or pass through the connective tissue network into the paravertebral spaces in order to produce its effects.

INDICATIONS FOR CAUDAL ANALGESIA

Contraindications for the use of caudal analgesia include the following:

1. Nervous and apprehensive patients who border on the hysterical and who will find something to complain of unless they are asleep during delivery.
2. Obesity, which makes the sacral hiatus difficult to palpate.
3. A history of quick labors in multiparas which will frequently not allow sufficient time before the delivery for the anesthetic to take effect.
4. Anomalies or infections about the sacrum.
5. Placenta previa, or premature separation.
6. Breech presentation.
7. Cephalo-pelvic disproportion.

Indications. There are certain specific conditions in which caudal anesthesia should be the anesthetic of choice for the obstetric patient:

1. Prematurity. The greatest factor in the death rate of premature infants is their liability to cerebral accidents. This liability may be lessened by caudal anesthesia, because of the relative softening and relaxation of the cervix and pelvic floor structures, thereby decreasing resistance to the cranial vault during contractions. In addition, all sedatives, amnesia agents, and inhalation anesthetics have been shown to enter fetal circulation, and therefore exert a depressing effect on the respiratory efforts of the fetus. This factor is not obtained by using caudal analgesia.
2. Heart disease, nonhypertensive. The patient is relieved of all emotional stress and strain and lies quietly and without apprehension.
3. Disease of the upper respiratory system. The element of hazard of an inhalation anesthetic is not present.
4. Renal disease in the absence of hypertension. There is no toxic effect on the kidneys.
5. Toxemia of pregnancy. The blood pressure is lowered and there is greater urinary output due to dilation of the glomeruli, thereby lessening the danger of convulsions.
6. Cervical dystocia. Caudal analgesia

has a softening and relaxing effect on the cervix.

7. Full stomach at time of delivery. General anesthesia is contraindicated because of dangers of aspiration, pneumonitis, and atelectasis.

Caudal analgesia should for the present at least be considered strictly a hospital procedure and those in immediate attendance on the patient must be thoroughly familiar with the method.

TECHNIQUE

For those not familiar with the method, I will review it briefly. Caudal analgesia is purely a local nerve block to the sensory nerves of the lower abdomen and lower extremities. This is brought about by carefully inserting a special malleable metal needle through the sacral hiatus and injecting a sterile 1.5 per cent solution of metycaine in a vehicle of Ringer's solution. The motor fibers are only slightly impaired so that the contractions of the uterus continue but the patient is not necessarily conscious of them. The sensations of cold, pressure, touch, and heat are retained. There is marked vasodilation of the lower extremities, causing a noticeable warmth and perspiration of the lower extremities. The height of the analgesia and anesthesia can be regulated by the amount, pressure, and time intervals of the injections.

RESULTS WITH CAUDAL ANALGESIA

As in all forms of conduction anesthesia the incidence of complete success falls short of 100 per cent. Failure is ordinarily due to anatomic anomalies of the sacrum or to inexperience in inserting the caudal needle. Siever and Mousel[4] had 12 failures in 300 obstetric cases or 4 per cent. Lull[3] reported 8 per cent failures in 553 obstetric cases. In the 10,000 obstetric cases reported from North American clinics by Hingson and Edwards[1] there were 81 per cent of complete success, 12 per cent of partial relief of pain, and 7 per cent of failure.

I started my small series on May 1, 1947, and completed it as of midnight December 31, 1947. All of these patients were handled in Angelina County Hospital, Lufkin, and the anesthetic agent used was metycaine 1.5 per cent solution, which comes already prepared in 200 cc. ampules. I used the special malleable metal needle and followed the technique as taught by Dr. Hingson.

During the eight month period I used caudal analgesia in a total of 113 cases. Of these 113 patients, 98 or 86.72 per cent had complete relief of pain, and 4 received more than 75 per cent relief, but not complete. Those cases with less than 75 per cent relief were classified as failures. This gives a total of 102 patients or 90.26 per cent who received complete or satisfactory relief of pain with childbirth. There were 11 cases or 9.73 per cent failures. Three of these failures were due to aspiration of spinal fluid after insertion of the caudal needle. The others were due to faulty insertion of the needle by the operator or too rapid dilation so that the metycaine did not have time to take effect.

After receiving my training from Dr. Hingson, I realize that it is a highly specialized technique and should not be attempted without this training. It is true, anyone can place the needle in the sacral hiatus, but even this method is not without its dangers. The most important thing to learn is what to do after the needle is in place. The physician must know how to give a smooth continuous anesthesia, what dangers to watch for, and how to combat them when they arise, Otherwise he will get small skipped areas of pain, unilateral relief, or a complete failure. Some patients require larger injections over shorter periods of time for total relief. The level of anesthesia must be watched and necessary injections used to maintain this level. The desired level of anesthesia is the umbilicus. The doctor who is not familiar with the dangers may jeopardize either the mother or the baby, or both. If he gives the metycaine into a vein, he may get a severe systemic shock. An injection into the dura will give a massive spinal anesthetic which may prove fatal. The most common danger is the fall in blood pressure. Usually this fall is slow and never dangerous either to the mother or the fetus, but constant blood pressure readings must be made to watch for this danger. If necessary, the feet must be elevated as high as possible and $\frac{3}{8}$ to $\frac{3}{4}$ grains of ephedrine by hypodermic given to combat this fall. Fetal heart tones must be checked to watch for fetal embarrassment.

It is this close watching of the patient and the necessity of the doctor's presence with the patient that cause many to say they do not have the time to spend, this being one reason that the method is not more generally used.

To the lay mind the purpose of caudal analgesia is to make the process of childbirth painless to the mother, and this is done dramatically to her as well as the anxious family. The patient is always instructed to come to the hospital only when her pains are hard and regular. She usually is admitted in pain and within a period of from twenty to thirty minutes usually receives relief and is comfortable. I have produced this comfort

in 86.72 per cent of my cases. With the other methods such results could never be obtained.

"Caudal" babies are usually crying and breathing before the hips are born. Consequently there are no drugs or anesthetics to depress the baby; there is no need for resuscitation that might injure its air passages. The baby is pink upon delivery and never blue unless there is a congenital heart lesion or massive atelectasis. There is no period of anoxemia and because of this it is a better baby. There is less intracranial damage because there is no anoxemia and there is no desire on the part of the mother to push down in the second stage of labor. There is such perfect relaxation of the perineum that there is less trauma to the baby's head.

The anesthesia usually carries through the second and third stages of labor so that the episiotomy and repair can be done without further injections. Because the malleable needle stays in place and is connected with the syringe and an ampule of metycaine by a three way stopcock, there is no undue effort to give repeated injections. If anything goes wrong such as the needle slipping out or becoming plugged, it is easy to transfer to other forms of anesthesia. The use of drugs such as quinine or pitocin must be carefully watched as the patient cannot feel the force of the uterine contraction and the drug may force a contraction so violent as to result in the rupture of the uterus or fetal embarrassment.

There is a much smaller loss of blood under caudal analgesia for the entire delivery. The average in my series is an estimated 75 cc. per patient. Blood loss under other types of anesthetics will usually triple that amount.

The mothers make a much more rapid recovery because they are not exhausted and they have had nothing to depress or nauseate them. Many have been served a soft diet tray soon after return to their room.

Many criticize this method on the ground that it increases the incidence of forcep deliveries. Many use low forceps anyway on primiparas, and low forceps correctly applied are used only to lift the head off the floor of the pelvis. I have noticed an increase in percentage of occipito-posterior and transverse deliveries because the fetuses have failed to rotate as a result, I believe, of relaxation of the perineum and pelvic floor.

I always remove the caudal needle after the delivery and repairs are completed. At this time I give, in the hip because of anesthesia, 1/3 grains of pantopon. This relieves the pain in the uterus and episiotomy after the anesthetic wears off. Because these patients have not had pain before, they notice this pain more readily.

The most noticeable result is seen at the six-week final check-up. The cervix seldom shows any lacerations. I have seldom had to cauterize a cervix for granulations after caudal analgesia. There are less complaints of backaches, especially in the sacral region. I have not had any cases of paralysis or muscular weakness following caudal analgesia.

Many women dread the process of childbirth less and are interested in what is going on. They all state that the thrill they experience when they hear their baby's first cry cannot be equaled. Of course, the disadvantage to their being awake occurs when the baby is not normal or something else goes wrong.

Caudal analgesia is, in my opinion, a safe means of controlling pain in childbirth, and I hope to see the day when caudal analgesia will be the universal method of anesthesia for childbirth.

SUMMARY

The use of continuous caudal analgesia as a safe means to relieve pain in childbirth was perfected by Dr. R. A. Hingson. The sensory nerves in the pain area are anesthetized by the passage of a solution of metycaine through the sacral hiatus and about the posterior nerve roots. Physicians practicing this method maintain it is one of the most satisfactory methods of anesthesia in childbirth.

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ABSTRACT OF DISCUSSION

Dr. Herman L. Gardner, Houston: Dr. Klein has given an excellent review of some basic anatomy, an understanding of which is essential to the physician who wishes to employ caudal anesthesia. He has described how an anesthetic agent can be injected into the epidural space through the sacral hiatus to block completely the sensory nerve supply to the entire birth canal. Had nature not provided this anatomic arrangement, Drs. Hingson and Edwards would have never received their notoriety and caudal anesthesia would not have created such rage and furor.

Dr. Klein has claimed nothing new in his discussion. Although his series is small, his results have been convincing, a point no doubt accounting for his apparent enthusiasm.

I am in complete agreement that the method is strictly a hospital procedure and one to be practiced

by the physician who has had not only special instructions but sufficient time to remain in constant attendance. He should be fully aware of all the dangers, and he should have at his immediate disposal the tools necessary for combating these potential dangers.

Dr. Hingson, co-founder of continuous caudal anesthesia in obstetrics, continues to write volumes on the "excellence" of the method. His statistical reports are convincing on the surface, but less so on closer scrutiny. For example, it seems unfair to compare the fetal mortality rate in a large group of women who have received caudal anesthesia in well regulated hospitals and delivered by obstetricians with the fetal mortality rate of the death registration area of the United States as a whole. To make the slightest implication that the better figures had to do with caudal anesthesia rather than good obstetric care would seem to be an inaccuracy. In the same statistical report there were 10 maternal deaths in 42,000 parturients attributed to the use or misuse of caudal anesthesia. This is far in excess of the number of deaths attributed to cyclopropane anesthesia in a similar number of patients delivered in St. Joseph's maternity hospital in Houston.

If the method has more merit than fault, why is there not 1 of 35 obstetricians, or 1 of 223 general practitioners in Harris County making its "goodness" available to their patients? Some of these men have acquainted themselves with its use even under the expert tutelage of Dr. Hingson.

There is no quarrel with Dr. Klein. His report shows that he is doing a good job. It is only hoped that his next thousand caudal anesthesia cases are as successful and uneventful as have been his first 113. I predict that Dr. Klein himself will soon give up the routine use of caudal anesthesia. The change will be forced on him by an increasing volume of practice or possibly it will be from a dampened enthusiasm resulting from complications or sequelae that far outweigh all the good which he may have accomplished.

It must be granted that caudal anesthesia has a limited use, but its five years of turbulent existence should be proof to all that it is not the panacea for relief of pain in childbirth.

Dr. Klein, closing: As previously pointed out in my paper caudal analgesia is not without its dangers; however, it appears to me that it is not any more dangerous than any other type of anesthesia used in childbirth. In preparing my paper I realized the pro and con issues concerning the adaptability of continuous caudal analgesia. I would like to reiterate the importance of a trained anesthetist in the caudal procedures. Furthermore, I would like to ask those of you who criticize this method but have never seen the function of continuous caudal analgesia to see just one case handled by a physician who has recognized training in the technique.

DIARRHEAL DISEASE TRANSMITTED BY FLIES

A two year investigation carried on in Hidalgo County by the U. S. Public Health Service in cooperation with the Texas State Health Department and officials of Hidalgo County has proved that flies transmit acute diarrheal diseases, a fact long considered by health authorities to be true although proof had hitherto been absent. The investigation, described in the October 8 issue of *Public Health Reports*, consisted of large scale fly control measures in one of two comparable areas which resulted in a significant reduction in the treated area of the incidence of diarrhea caused by Shigella.

CESAREAN SECTION

CHARLES L. McGEHEE, M. D.
SAN ANTONIO, TEXAS

No one knows when the first suprapubic delivery of an intra-uterine fetus occurred. Its origin has been lost in antiquity. Historically, it was rarely resorted to because it carried a prohibitively dangerous mortality for the mother and was employed in only those cases of the smallest pelves, through which it was absolutely impossible to deliver a live baby and almost impossible to deliver a dead one.

After 1500, various types of abdominal deliveries were carried out but rarely successfully until 1882, when Sanger suggested that the uterus should be sutured following the removal of the products of conception. That was the first step taken in the direction of improved maternal mortality. With the development of antisepsis, asepsis, and anesthesia, some of the major obstacles were removed.[4, 11]

INCIDENCE AND MORTALITY

The trend has been an increase in the incidence of cesarean section because it is technically easy and is mistakenly regarded as a safe operation; on this account it is used for much more numerous and broader indications than formerly. Still, however, no standard set of indications or contraindications for the procedure is widely accepted.[2, 12]

There is a great variation in the incidence and mortality in different parts of the country. In some areas the incidence is less than 1 per cent; in others it exceeds 10 per cent. In general hospitals the incidence is somewhat higher than in lying-in hospitals, where the incidence rarely falls below 3 per cent or rises above 5 per cent.[4]

The mortality rate for both fetus and mother varies as much as does the incidence of the procedure. In several large series over ten year periods, the mortality rate is less than 1 per cent while exceeding 10 per cent in others.[2] In cases of elective section the fetal mortality is around 2 per cent, which compares favorably with vaginal deliveries, but the over-all fetal mortality for delivery by cesarean section is from 8 to 10 per cent, a rate made high by inclusion of cases of premature separation of the placenta, placenta previa, and toxemia of pregnancy, in which the low survival rate of the fetus is due in part to the preexisting condition, not to the operation.[12]

Read before the Section on General Practice, State Medical Association of Texas, Annual Session, Houston, April 27, 1948.

ELECTIVE INDICATIONS

Disproportion.—The most frequent indication for section is contracted pelvis with cephalopelvic disproportion. It should be pointed out that a contracted pelvis in the absence of cephalopelvic disproportion is not an indication for operative intervention. At the present time from 40 to 60 per cent of all sections are done for this indication.

When obstetricians speak today of cephalopelvic disproportion, they do not refer to the time-honored "absolute contractions" of the pelvis through which a living child cannot possibly be born. The standard of degree of contraction has properly been liberalized so that "disproportion" is now a relative term, applicable broadly to any situation in which the mechanical circumstances of labor imply less damaging trauma to maternal soft parts and to the fetus by employing the abdominal route. There should be no problem in deciding the course to follow when the pelvis is shown to be definitely abnormal by clinical measurement or by legitimate roentgen-ray mensuration. In the borderline cases of disproportion, the patient should be given a test of labor. According to Dieckmann[3] the patient should have "hard uterine contractions at 3 to 5-minute intervals, lasting at least 35 seconds for 12 to 18 hours. A maximum of two rectal and two vaginal examinations are made. . . . If in this length of time the cervix has not dilated satisfactorily, or the head has not descended to the level of the spines, cesarean section is performed."

Repeat Cesarean Section.—This group is becoming more important each year because of the increasing number of sections, and because of the widespread belief that "once a section, always a section." This indication accounts for from 10 to 25 per cent of all sections done. Duckering stated that once a patient has had a cesarean section, statistics show that her chances of requiring another section are only from 30 to 50 per cent. This figure is modified somewhat by the original indication.[5] Dill[4] has contended that "the patient should be allowed to have the baby vaginally, provided disproportion does not exist, that the indication for the original section is no longer present (placenta previa, inertia, etc.), that the puerperium was not febrile and that the surgeon doing the previous operation used reasonable technic." In view of the high maternal and fetal mortality due to uterine rupture and the impossibility of knowing which scars will not rupture, I believe that a previous cesarean section in general warrants a repeat operation.

Placenta Previa.—At this time placenta previa accounts for from 5 to 10 per cent of the total sections done. Moore in a recent paper[10] summarized the trend toward the conservative treatment of placenta previa as advocated by Johnson.[8] Extensive studies have shown that vaginal delivery is accompanied by a maternal mortality ranging from 0 to 11 per cent with an average of 6 per cent for all hospitals and 3 per cent for maternity hospitals. Delivery by cesarean section has a range of from 0 to 11 per cent with an average of 4 per cent for all hospitals. In most places the low-lying placenta and the marginal previas are allowed to deliver from below while the partial and total types are delivered by section.

Diagnosis of placenta previa is by vaginal examination. Visualization of the placenta by roentgen ray is not perfect or always feasible, nor does it give information as to the degree of previa. The vaginal examination, however, should be delayed. It is helpful for the physician to know that unhurried and untraumatized placenta previa does not mean that the patient will bleed to death with the initial gush of blood. It has been shown by Johnson[8] and substantiated by a review of the records of John Hopkins[6] that the initial loss of blood in a placenta previa is not fatal unless vaginal examination or manipulation is performed. It has been repeatedly observed that some patients have a "sharp" but not severe hemorrhage at thirty to thirty-four weeks' gestation; later the placenta can be palpated in the cervical os without provoking further bleeding. This is due to infarction of the separated areas.[8]

Finesse and excellence of judgment are necessary in handling such cases, particularly when the first bleeding attack is noted prior to viability of the fetus. A course of watchful expectancy under hospitalization until the fetus is viable, the judicious use of transfusions and a sterile vaginal examination with the operating room set up to do a section will help the physician determine the course to follow, combining safety for the mother with advantage to the fetus.

Elderly Primigravida. — Here I do not mean merely the statistical elderly woman. I mean the patient who is having her first and probably her last baby, with a long history of previous sterility or who for some reason is possibly not going to become pregnant again. Such a patient should run no excessive risk in getting a live baby. If with a trial labor, all findings being normal, she has fair promise of good labor and easy delivery, the physician is justified in allowing delivery from below, but with any complicating factor or factors such as breech presentation,

premature rupture of the membranes, uterine inertia, or borderline disproportion, an elective section should be chosen. From 5 to 10 per cent of all sections are done for this indication.

Abruptio Placentae.—This condition is the reason for from 4 to 8 per cent of all sections done. Dieckmann, quoting Bland, Rakoff, and Irving in their Collective Reviews, stated that the maternal mortality in abruptio placentae ranges from 0 to 18 per cent with an average of 6.3 per cent, and the fetal mortality ranges from 55 to 100 per cent with an average of 66 per cent. The average maternal mortality for vaginal delivery was 4.1 per cent and for cesarean section was 11.2 per cent.[3] The consensus is that with small areas of separation in which labor is progressing well, nothing need be done except to keep close observance with operative equipment at hand. Even if complete detachment occurs late in labor and it is believed that delivery from below can soon be effected, the procedure of choice is vaginal delivery. Patients presenting evidence of shock, low hemoglobin, rapid pulse, and a uterus larger than normal for the period of gestation, and in whom the cervix has not dilated are best treated by cesarean section.

Toxemia of Pregnancy.—This indication accounts for from 4 to 10 per cent of all sections done, although conservative medical treatment has long proved to be the method of choice. Some cases despite excellent care may progress to the point of convulsions and maternal danger requiring an elective cesarean section.

Abnormal Presentation. — It is common practice to do a cesarean section for transverse presentations in primiparas and recurrent transverse presentations in multiparas. A breech presentation per se is not an indication for a section; however, in patients with borderline pelvis or in elderly primiparas with large babies, sections frequently make the safest method of delivery, certainly as far as the baby is concerned. Face and brow presentations may be allowed to deliver so long as labor is progressing satisfactorily, but in the case of a primipara with a face presentation which remains high early in labor, an elective cesarean section is warranted. From 2 to 4 per cent of all sections are done for abnormalities of presentation.

Uterine Inertia and Cervical Dystocia.—This condition accounts for another 2 to 4 per cent of all sections done. At this time, the preponderance of opinion favors other methods to deal with all but the rare case of uterine inertia or cervical dystocia. If a section is to be done on this indication, the attending physician should operate before the patient has been in labor twenty-four hours, before the membranes have been ruptured twelve hours, and before excessive vaginal examinations have been made.[13]

Obstructing Pelvic Lesions.—These lesions are for the most part made up of ovarian cysts or myomas of the lower uterine segment. They produce indications for from 2 to 4 per cent of all sections.

Heart Disease.—In cases of cardiac disease with complicating obstetric factors such as breech presentation or borderline pelvis or where the stress of pregnancy threatens decompensation, delivery by cesarean section at the most opportune time is warranted.

Plastic Vaginal Repairs.—This indication is becoming more frequent because of the more extensive use of the vaginal plastic repair. I believe that a young woman who has not had all her family should not have a vaginal repair, unless absolutely necessary, and then in the event of a subsequent pregnancy, she should have a section.

Anti-Rh Factor.—Since the development of recent knowledge of the Rh factor and its significance in erythroblastosis fetalis, numerous sections are being done to remove the fetus from this danger. In cases in which the father is homozygous the anti-Rh factor should be determined by competent laboratories every two to four weeks after viability of the fetus is reached. In the event of a rising titer, the baby should be delivered as soon as possible. In multiparas in whom delivery from below can be accomplished by induction without danger, this method should be followed. In primiparas or multiparas in whom induction seems unsafe, cesarean section is desirable.

TYPE OF OPERATION

Previous reviews of cesarean sections show that the death rate from this procedure drops sharply as the percentage of elective operations increases. A voluminous literature discloses debates, sometimes acrimonious, concerning the merits of the various types of cesarean sections.

In my opinion the operation of choice is the low cesarean, and in most instances I advocate this procedure. Briscoe[1] in a recent review of all the cesarean sections performed at the Philadelphia Lying-In Hospital for a period of several years found that the low section is followed by much lower morbidity. Adhesions due to previous classical operations were 5 times greater than in the low type. Another factor in this series was the superiority of the low section in preventing

subsequent rupture of the uterus. The incidence following classical sections was 1 per cent. In the low cervical procedure there was none. This report also revealed that the operation of choice for the infected patient was an extraperitoneal cesarean section rather than the Porro type.

CONCLUSION

It must be understood that the opinions and statements made here are based on the statistics of the past, and with the use of better techniques, plasma, transfusions, and antibiotics, the future should see a lowering of the total cesarean section mortality. As these aids have reduced the hazards of section, they have also reduced the hazards of vaginal delivery, and since the mortality rate is still many times in favor of the vaginal delivery, physicians must give careful consideration to existing conditions and seek competent consultation since each case poses an individual problem. With proper evaluation of cases the good use of cesarean section will embody a better prospect for the mother and child.

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ABSTRACT OF DISCUSSION

Dr. William M. Gambrell, Austin: Dr. McGehee's discussion of obstetric problems necessitating a cesarean section, the incidence of cesarean section in such problems, the type of section to be used, and the risk incidence to both mother and child is sound. His discussion should make all physicians more conscious of their responsibility in making known clearly to the patient the risk in cesarean section to the mother as compared to the risk in any other method of delivery. Also his discussion should make physicians more conscious of the risks to the fetus, particularly in such conditions as repeat sections, placenta previa, premature separation of the placenta, and toxemias.

Dr. McGehee points out that the highest incidence of cesarean section occurs in cases of disproportion. I agree with him that these cases should be studied carefully and that the physician should not wait too long to see whether progress will occur in those cases where disproportion of any degree is definitely established. I am not sure that a definite time for which to wait can be set in any case of known disproportion where adequate pains have existed with little or no progress made. I believe it is wiser to individualize cases and interfere in the wisest manner as soon as it is relatively sure that the maternal or fetal condition or both will be best served by interference.

The question of "repeat cesarean section" is delicate. I have seen a uterus rupture before the end of the sixth month in a case previously sectioned. This patient had a difficult time surviving, and I believe she survived because of the excellent judgment of the doctor who asked me to see the patient with him. I saw another patient in the charity service in Austin who had two living children. The first was born by cesarean section; the second normally. I saw her at the beginning of labor at term with her third pregnancy. The uterus was thin and I recommended a section. She asked for permission to see the doctor who delivered her second baby. The doctor was called and said he would see her again in an hour or so. The uterus of the patient ruptured in less than an hour and he was unable to act in time to save her life. I think that in the vast majority of the cases physicians will do well to follow the rule, "Once a section, always a section."

The elderly primipara offers another delicate obstetric problem. I am inclined to think that a cesarean section should not be chosen for such a patient on the basis of age alone; but, if in addition to age there are other complicating factors, the physician will act wisely in many selected cases by electing a cesarean section.

I agree with Dr. McGehee that in the vast majority of cases toxemias are medical cases and should be treated to obtain the best results. If, however, in the face of what is considered good treatment the toxemia is not controlled and the labor has not advanced to the stage at which easy delivery from below can be done, it is wiser to do a section early before the patient has become a poor operative risk. These patients are all poor operative risks after they have reached the convulsive stage.

LOW-TEMPERATURE RESEARCH

Scientists are unravelling mysteries of chemical substances important to biologic processes by studying them at extremely low temperatures which slow down molecular motion. A low-temperature research project conducted under a grant from the American Cancer Society was described by Dr. John R. Loofbourow, professor of biophysics, Massachusetts Institute of Technology, at the annual meeting of the Optical Society of America in Detroit, October 23.

By reducing chemical compounds to a temperature near absolute zero, details of complex molecules hitherto unobservable can be studied by spectroscopic methods, he said. The research throws new light on cell division and growth and also on substances affecting living organisms, and it therefore leads to a better understanding of the processes that take place in living systems, both in normal functioning and disease.

"At room temperatures, various physical factors arising from the heat motion of molecules would be expected to result in loss of detail in the information obtainable by absorption spectra. This circumstance suggested the possibility of obtaining more detailed information about chemical molecules by applying spectroscopic methods at low temperatures," Dr. Loofbourow said.

"The increased spectral detail thus obtained at low temperatures is of use not only in unravelling mysteries of structure in biochemically important substances but also in identifying such substances when they are intermixed with other compounds of similar structure."

SOME FACTORS WHICH AFFECT RESULTS IN BREECH DELIVERY

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A physician builds up his knowledge of birth dynamics around head presentation because he has 95 per cent more experience with head presentation than he has with the other 5 per cent which includes breech presentation. To think of breech labor in terms of head labor is natural and logical. Up to term there is practically no difference between cephalic and breech pregnancy. In either labor the patient moans with the same sounds, shrieks the same screams, and wants to get through with the ordeal as soon as possible, and as painlessly as possible. In both kinds of labor a fetus passes from the uterus through the cervix, traverses the birth canal, and emerges outside. Nevertheless, there is a great and important difference obstetrically as to which end of the fetus descends first.

Head labor differs mechanically from breech labor in that when the head comes first, the head being of larger caliber than the torso, all other fetal anatomy follows freely in the wake of the head, whereas in breech first the presenting part and the torso are of smaller caliber than the after-coming head. The fetal torso of cephalic presentation fits the channel which the head forces open, but the head of breech labor does not fit the channel which the breech torso opens up. Therefore, birth hazard is greater in breech birth in which the possibility of head retention and cord compression, with danger of fetal asphyxiation, has to be remembered during the piloting of the breech and has to be anticipated well in advance so that it may not happen, and so that it may be dealt with, should it occur, by properly timed skill and good obstetrical judgment.

The fetal head in cephalic presentation is the best obstetric instrument present at any birth. The head is a natural dilator in situ. It is spherical; it is symmetrical; it is devoid of abrupt angulation; it is of firm yet yielding consistency so that when expulsive force thrusts it against maternal obstructive barriers its plasticity absorbs and transmits the direction of force to the point of least resistance. Expulsive force utilizes head plasticity to squeeze the cranium and point it into its natural pathway down the canal.

While the head is functioning as a dilator and director it also functions incidentally as a measuring device. It measures relative size of its own dimensions against the fixed limits of the pelvic bones, and modifies its shape accordingly to fit. The head measures relative rigidity and elasticity of maternal soft tissues against its own mass as it undergoes plastic adaptation to expulsive force. This data is readable by observation and by the skill in the tip of the exploring finger. The physician's knowledge, experience, and judgment interpret and calculate the findings. The physician, as he pilots a head delivery, is reassured when the descent of the vertex is progressive, for he knows that torso is compelled to follow head. Thus, a head assists birth more efficiently than a breech.

NORMAL BREECH DELIVERY

A breech is soft, compressible, resilient, angular, and asymmetrical. At the onset of labor, a breech does not settle down into and conform itself smoothly to the cervical segment of the uterus. Early in breech labor dilating and expulsive forces act more slowly and less effectually than on a head, and so the patient is likely to be in the first stage longer and more painfully with breech than with cephalic labor.

In both cephalic and breech labor a fetus is expected to assist himself in the process of his own birth. This fetal assistance is by maintenance of his muscular tone wherewith he braces himself intra-uterinely to react to expulsive force and move progressively with it. Muscle tone preserves intra-uterine fetal attitude and prevents disarrangement of extremities and the head. A labor delivering a dead fetus best illustrates the unfavorable effect on progress where fetal muscular tone is absent. A labor may be deprived of tonic fetal assistance by maternal over sedation and/or anesthesia excessive of judicious needs.

Early rupture of the amniotic membranes in cephalic labor does not add appreciably to the hazard of the labor. Actually the progress of such labor may be improved advantageously by early membrane rupture in those cases where the membranes are drawn tightly over the cranium and hydrostatic fluid forms inadequately in front of the head.

The folds and creases of a breech allow amniotic fluid to be forced by hydrostatic pressure against the cervix to a greater advantage as a dilating bag of waters, than a head usually allows.

In breech labor it is preferable that accidental rupture of the membranes not occur before the onset of labor and that after the

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onset of labor the membranes should resist rupture until the cervix is effaced, thinned, dilated, and retracted and the examining finger reports that welcome news, "no cervix!"

Fetal plasticity assists breech birth as advantageously as it assists cephalic birth. At the onset of breech labor, before the cervix dilates, the breech is not a compact tampon like a head. It is a sitting down fetus, nonconforming to the exit or passage he must traverse.

As expulsive force drives the fetal breech downward, breech plasticity transforms the caudal anatomy into a semihomogenous tamponade which has dilating properties, and which does engage the pelvis and descend as a unified, compact mass in a manner similar to a head. This special molding of the breech, which may be slow to take place in the first stage, is not completed until well along in the second stage, but it is physiologic and necessary and should not be disarranged by injudicious tampering before the molding has served its purpose and all downward progress ceases. The whole fetal body shares in the plasticising of the breech and influences the arms to descend in fetal attitude without becoming extended over the head or up the scapula. If left alone, this molded tamponic mass retards expulsion until the cervix has dilated large enough not to grasp and retain the head, that is, until the proper time has arrived for the head to pass down.

It must be borne in mind that during all of this dilatation by the molded breech torso, the squeeze force surrounding the head is being exerted by soft tissue and fluid, which does not act upon the head to change its natural intra-uterine shape. Consequently, the head as it follows the breech has to descend unmolded.

After the breech is born, the head must descend and be born within an elapsed time of not more than eight to twelve minutes, else there may be fetal suffocation from cord compression. Hence, physicians are always somewhat startled at the sight of the undistorted shape of a head following breech delivery because they are so much more accustomed to seeing the distorted heads of cephalic births.

When it is considered how much molding is usually necessary for a head to be born in cephalic delivery, it is to be expected that the after-coming head in breech delivery may not always deliver with ease. Normal cephalic birth should proceed at a rate of progress commensurate with safety. Cephalic delivery can be hastened and terminated by attaching obstetric forceps to the fetal head and making traction. With breech presentation, however, the legs are not to be regarded as traction handles to hasten the progress of the breech descent. Yet the presence and the accessibility of the legs and flexed thighs are a constant temptation before the hands of the physician, falsely suggesting to him that the labor should be aided by grasping and traction. This temptation is especially strong when the physician, by fatigue or impatience, comes under the spell of wanting to get through. To extract a torso and then injure the brachial plexus or central nervous anatomy of a retained head or to have fetal asphyxiation occur before the head can be delivered is not quality obstetrics, yet it is likely that every physician has had some such accident in his practice one time or another.

ADVERSE FACTORS

Factors which affect results adversely in breech delivery may arise in the mother, in the fetus, in the obstetrician, or in external affairs. They all add up to a common factor of ill timed interference or ill advised promotion of haste.

The mother, as her labor grows prolonged and agonizing, may develop a compelling desire to get it over with. The obstetrician may treat this complication by an undesirable degree of over sedation. Ill timed coaching may expend and exhaust the mother's strength too early, so that when her cooperative effort is needed her strength has been used up.

The obstetrician may not be able to withstand, to the best interests of the case, the cries and pleadings of the agonized patient when her effort is most needed. At this point, drugs and anesthetics may be injudiciously administered in quantities which destroy the patient's ability to cooperate with voluntary effort. The tonicity of the fetus may be lost, and extention of the arms and head may take place to complicate terminal maneuvers of the delivery. Deep narcosis and deep anesthesia depress respiratory reflexes and compound the terminal anoxemia at the stage of cord compression.

Any labor that is prolonged interferes with a physician's other work and duties. Weather and distance and travel conditions, especially in rural home deliveries, may cause the physician to speed up his breech case adversely.

Be it said here to the credit of the country doctor that he does not commit all the obstetric sins. His very aloneness and abso-

lute responsibility are sustaining and restraining influences to the safer performance of his professional responsibilities. The manifold obstetric facilities of modern hospitals innocently invite ill timed interference with nature's cycle of labor, because to interfere is easy and there is help at hand and shared responsibility if anything goes wrong.

If a woman in labor is left to her own way of using her forces, she will employ these forces at the right time without being urged by attendants, thereby avoiding exhaustion with its attending complications. Premature intervention is just as productive of bad results as prolonged and needless delay in delivery of an arrested descent. Test of labor, be it breech or cephalic, is what a woman can accomplish, rather than what she can endure. Nevertheless, a woman's endurance should not be underestimated to the detriment of the outcome of her labor. Proper timing is the yardstick by which each decision in the piloting of breech labor should be measured. Decisions based upon wishful thinking and sentiment need to be subordinated to this all important proper timing.

PRECAUTIONARY MEASURES

Hard and fast rules which will apply to all cases of breech delivery cannot be laid down, but obvious pitfalls can be avoided by giving each case individual study as the pregnancy progresses and throughout the course of labor.

A complete examination at the seventh month will reveal the individual tendency in presentation at a time when it is possible, in some cases, to correct the error in polarity by external version. There is a relatively larger amount of fluid and a smaller baby at that time than at any later date, yet the fetus has attained to a settling down size and is adopting his final birth position. External version in some cases is a simple technique, while in others it is difficult and not without danger of cord strangulation and detachment of placenta. It is permissible to do a podalic version if conditions are such that it can be done safely, but in most cases it is best that a breech presentation remain a breech.

As the estimated date of delivery approaches, the patient and her husband should be informed of the presence of the breech. At the same time, they should be warned against believing or being disturbed by hearsay gossip about the hazards of breech labor. At the onset of labor, the patient needs to be informed of certain features of breech birth management, particularly that a breech presentation requires her cooperation more fully than if it were cephalic, and how and why, and that, consequently, hypnotics and anesthetics will have to be restricted within her cooperative limitations. When a patient is forewarned what to expect and what not to expect she will do her part cheerfully.

The fetal heart must be watched and recorded frequently throughout the second stage of labor. Signs of intra-uterine fetal distress call for an accelerated delivery, provided dilatation is complete, and oxygen should be used if available.

Slowness of breech labor, as long as there is appreciable progress and the fetal heart beat is strong and regular, does not call for intervention.

A small percentage of breech labors will progress to a given stage and remain stationary beyond reasonable time. If dilatation is complete, corrective intervention from below is undertaken with whatever type and degree of anesthesia is required.

Cesarean section is reserved for cases arrested higher up, old primiparas, pelvic disproportion, patients who have had repeated loss of babies from difficult labors, former section cases, and central placenta previa. Also there is one other indication: ruptured membranes with the fluid drained away and the uterus refractory to starting labor. In such a complication the uterus grasps the fetus, compresses the cord, and may cause fetal death, while the uterus slowly pushes the breech down and expells the body.

The roentgen ray is helpful in determining the type of breech present and for identification of congenital malformations such as hydrocephalus. The use of section for breech delivery in the presence of hydrocephalus is inadvisable for obvious reasons.

Most breeches will deliver spontaneously with practically no manipulation if permitted to do so. However, Piper's forceps should be on the instrument table for immediate use if the physician encounters difficulty with the after-coming head. The breech labor should be so managed that the after-coming head will not be retained by the cervical segment of the uterus. Nevertheless, there may be head retention by slight disproportion of the head within the bony confinements of the pelvic ring. A fetal neck will endure a certain amount of traction and manipulation to release a head, but the fetal neck has a critical limit above which damage to the brachial plexus or to the cord or brain stem may occur; therefore, the necessity for recourse to

Piper's useful, but infrequently needed, breech head forceps.

Some cases of footling breech presentation let the presenting part emerge before full dilatation of the cervix. This is especially likely to happen when the baby is premature. The fetal toes usually rupture the membranes early in this type of case. Footling breeches that release too early in labor have a tendency to descend too fast, and to protrude before the cervix is ready to release the head. They need to be held back by towel over the vulva until the cervix has advanced its dilatation up to a diameter safe for release.

Intermittent light anesthesia is useful in such a retardation and restraining procedure.

CONCLUSION

Adverse happenings and bad results in breech delivery can nearly always be attributed to incorrect timing in whatever maneuvers were employed and to improper regard of mechanisms and forces involved.

Successful results in breech delivery depend upon mature obstetric judgment, patience, endurance, and forbearance with both patient and physician, combined with a technical skill that is exercised not too early and not too late.

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ABSTRACT OF DISCUSSION

Dr. B. H. Passmore, San Antonio: Dr. Robinson has stressed most of the salient points pertaining to breech presentation.

One mistake that is made is trying to correct a breech presentation too early. Many times if it is corrected at thirty-four or thirty-five weeks it recurs, and more often it corrects itself at thirty-six or thirty-seven weeks.

One of the most serious problems that faces the obstetrician is the decision as to whether cephalopelvic disproportion exists. There is no way of measuring with any degree of accuracy the baby's head when the breech presents. All that can be done is to measure the pelvis accurately and estimate as nearly as possible the size of the baby and hope it will come through. There is no such thing as a trial labor, though I know of 2 cases in which the baby's body was pushed back and a cesarean section done after attempts to deliver the after-coming head had been made. There was a live baby in each case, but in 1 case there was marked evidence of severe and prolonged infection, and I would not recommend this procedure.

If there is pronounced contraction or deformity of the pelvis, especially if the mother is a primipara or a multipara with a history of a baby killed at delivery, I do not think that vaginal delivery should be undertaken.

Prolapse of the cord occurs rather frequently, but if the cervix is dilated or easily dilatable, quick delivery can be instituted and the baby usually survives. In such a case there is no time to prepare for a cesarean section.

I agree with Dr. Robinson that in the average case it is better to wait for the baby's hips to be delivered spontaneously after which the delivery is completed in the usual manner. However, an impacted breech should be broken up and a leg pulled down after the tissues have softened sufficiently.

I think that routine analgesia should be used so that prompt anesthesia may be induced in case of cord prolapse or if other fetal distress occurs.

In an elderly primipara with a large baby with extended legs, or in any primipara with a contracted pelvis and a baby on the borderline of being too large, a cesarean section should be done.

POSTPARTUM CARE

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A conscientious physician must have the highest regard for the welfare of the new mother, who has given nine months of her life and endured the discomforts of pregnancy and dangers of childbirth in order that she might bring a normal, healthy baby into the world. Every consideration possible should be accorded the patient to complete her puerperium with a minimum degree of discomfort and inconvenience. She should be given the opportunity gradually to resume her normal activities and enjoy as good or better health than she did before conception.

The six or eight weeks following labor are termed the puerperium or postpartum period. This time is required for the involution of the maternal organism. Postpartum care begins immediately after delivery. Efforts to prevent any unnecessary blood loss and attention to the mother's safety until she has completely recovered from her sedation and anesthesia constitute the physician's first duty.

HEMORRHAGE

Postpartum hemorrhage is due most often to one of three causes: (1) uterine inertia as a result of overdistention (as in twins and hydramnion), prolonged labor, multiparity, or anesthesia and sedation, or a combination of these factors; (2) retention of secundiness; or (3) lacerations.

Prevention of postpartum hemorrhage, with its many serious complications, is a routine prenatal procedure. Blood examinations are made during this period and necessary medication administered before delivery. The Rh factor is checked, and suitable donors made available if blood findings indicate the possible need for transfusion at the time of delivery.

When postpartum hemorrhage does occur because of uterine inertia, it can best be relieved by administering .33 to .5 cc. of pitocin intravenously. The anesthetic is discontinued

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at once. The pitocin should be followed promptly by intramuscular injection of 1/320 grain of ergotrate. Friction massage and cold applications over the fundus may also be needed. An ice bag over the area stimulates uterine contraction and may relieve discomfort. In exceptional cases, it may be necessary to pack the uterus. This should be done with moist strips of long-fiber sterile cotton. Gauze is not satisfactory. The patient must be kept under constant observation for several hours. Additional ergot should be administered only as indicated by uterine tone, and never should be given while the uterus contains packing as it may cause uterine rupture. Routine administration of ergot increases after pains. Parenteral fluids should be administered as conditions demand. A T-binder only should be applied to the abdomen. Tight binders over the fundus tend to cause relaxation and hemorrhage. Furthermore, the condition of the uterus and bladder cannot be properly evaluated when there is a wide, tight binder over the abdomen.

Retained placental tissue should be removed at once. Proper manipulation of the fundus through the abdominal wall usually is all that is necessary. If this procedure fails, the tissue is probably adherent and must be removed manually with proper aseptic care. Prophylactic chemotherapy should be instituted at once. The only reason to delay manual removal of retained placental tissue is shock.

Deep cervical lacerations, which may extend even into the lower uterine segment through the circular artery of the cervix, should be repaired at once, if at all possible. Otherwise the vagina should be packed until proper facilities are available for repair. Perineal lacerations usually result in venous bleeding only. This may be easily controlled by pressure until repair is made. Perineal as well as cervical repair should be done immediately after removal of the placenta. The skin sutures should be subcutaneous. There is less skin infection when skin sutures are subcuticular.

Other causes for bleeding, such as blood dyscrasia and tumors, should be coped with as the condition demands.

PERINEAL REPAIRS

Perineal repairs should be sponged dry after the patient has voided or defecated. An ointment such as zinc oxide applied to the perineum will help relieve the burning sensation caused by sutures. If there is pain, much relief may be obtained by the use of dry heat. This is best administered with a perineal heat lamp. Occasionally, because of severe discomfort from the repair, ½ grain of codeine and 5 grains of empirin compound are given every four hours as needed for a day or two.

A complete blood count should be made on the fifth or sixth day, or before if indicated, and medication administered according to needs. Examination of a catheterized urine specimen should be made if there is suspicion of genito-urinary complications and appropriate therapy should be instituted. A well balanced diet should be resumed as soon as it can be tolerated.

Fortunately for this generation, puerperal infection is rare, due to the fact that physicians are more "prophylaxis" conscious than ever before. Any patient who develops complications after she has left the delivery room is taken to surgery for examination. Postpartum patients are not allowed to be returned to the delivery room.

All patients with infection should be isolated immediately if they are in a hospital. Sulfa or penicillin or both should be administered as soon as the diagnosis is made. The uterus should be kept firm by the administration of ergot or pituitrin or both in order to help empty the uterus and keep it empty. An ice bag should be kept over the patient's fundus. She should be kept in the Fowler position. She should have a diet of high protein and vitamin C with forced fluids. Vaginal examination should be avoided unless definitely indicated. Thorough blood and urine examinations should be made. Any medication or additional supportive treatment should be administered, including transfusions.

After pains call for heat to the abdomen, progestin 1 cc. subcutaneously codeine ½ grain, and empirin compound 5 or 10 grains, as needed.

No cathartics should be given. Mineral oil, .5 ounce morning and night, may be given if necessary. This merely acts as a lubricant and prevents impaction. An enema of normal saline solution should be given every other day as needed. With the present routine this is seldom necessary.

MANAGEMENT OF BREASTS AND BABY

After the breasts fill the baby should be allowed to nurse from each breast three minutes every three or four hours during the day. The nursing time should be increased as the quantity of milk increases. The baby should never be permitted to nurse for more than three to five minutes after the breast is empty to stimulate milk production and hasten uterine involution. At no time should the baby be permitted to nurse direct-

ly from the nipple if the nipple is cracked or the skin broken. Cracked nipples treated by cleaning with 70 per cent alcohol and painting with 10 per cent silver nitrate heal more quickly. When there is doubt as to the quantity of milk, the breasts should be pumped before nursing. A formula should be given to the baby immediately after breast feeding in accordance with the amount of the mother's milk.

If the mother's milk is less than 1 ounce from each breast on several different days after the fourth day, the breasts should be dried up. A tight binder should be applied after the breasts have been well emptied, leaving it in place for three days. The binder will become loose a few hours after it is applied and should be tightened again at that time. If the breasts cause discomfort after the binder is applied, it may be necessary to apply ice bags for a few hours. If the above directions are followed and the binder is kept tight continually for three days, the results will be uniformly satisfactory. This method of drying up the breasts has proved far more satisfactory and dependable than any other procedure and it has none of the disadvantages of stilbestrol injections. I had several patients in whom lochia was greatly increased by stilbestrol, and there was profuse bleeding in a few instances. Meprane,[1] a new synthetic estrone for oral use, has been given a clinical trial in suppression and inhibition of lactation under carefully controlled conditions with some reported success. With this I have had no experience.

I suggest to my patients that they have a pediatrician see their babies at least once before the tenth day after birth. I also suggest an immediate Rh factor determination on every baby and recheck on all Rh negative babies in three months. This is especially important in girls. If the information obtained is transmitted to the parents, an error in transfusion at a later date may be avoided.

Visitors are not permitted to be in the patient's room while she has the baby for feeding. The patient is in the hospital for rest, not for entertainment. Visiting hours should be limited to one hour in the afternoon and one hour in the evening.

I tried keeping the baby in the room with the mother, the so-called "rooming in" system, but found it unsatisfactory for several reasons: (1) Babies and mothers frequently kept each other awake at night. (2) Ventilation at night was not satisfactory. (3) It was impossible to prevent visitors from handling the baby, thus running the risk of infection. When the visitors were limited to the husband only, the mother was not happy and the grandparents and other close relatives complained. (4) Babies kept in the mother's room were not permitted to be brought back to the nursery. Not only was it necessary to supply complete baby bath facilities for each baby, but also scales had to be provided.

EXERCISE AND MASSAGE

After the patient awakens she should be encouraged to turn on her side from time to time. She should be shown how to give herself a friction massage of the fundus and instructed to do this for five minutes three times a day.

Chin to chest exercises six to eight times after each nursing are ordered after the second day. The patient is requested to be on her abdomen one hour each morning and afternoon after the third day. No leg lifting or sitting up exercises are advised until the lochia ceases to be red.

The morning of the first day the patient is allowed to swing her feet over the side of the bed and sit upright for fifteen minutes. During the afternoon she is allowed to sit in a chair for half an hour. On the morning of the second day she is allowed to walk to the bathroom with the assistance of a nurse. Thereafter she has bathroom privileges and is told that she may sit up as she is able at longer intervals and walk about the room and halls, but is advised not to tire herself. These patients are not dismissed until the seventh day.

I have been following this routine for more than a year, and it has proved much more satisfactory than the old routine of four days or more in bed. There is an increase of lochia the first day the patient gets out of bed. The amount is less thereafter in those patients who get up. Involution is faster. Phlebitis and circulatory disturbances are less frequent. There is much less constipation. Multiparas who had been kept in bed eight or nine days following previous deliveries and who now follow the new routine are enthusiastic about it and state that they feel much better on leaving the hospital. They also look much better. This routine is followed not because of a shortage of help or beds but because it gives better results and offers many advantages. After the second day patients need little bedside care. They get their own drinking water and go to the bathroom as necessary, reporting to the nurse for record. Thus the nurses can give more time to patients during labor and the first days postpartum.

Included in the group of patients who followed the new routine were 14 delivered by cesarean section. They were allowed to get

up the same as the patients who had birth canal deliveries. The results were equally satisfactory. Patients who had perineal repair complained less of discomfort from the "stitches," and healing was not delayed as the result of getting out of bed on the second day. My experience with early puerperal ambulation substantiates the reports of Waters,[5] Rosenblum, Gordon and Meinkoff,[4] Hanley,[3] and Guerriero.[2]

Unless there is some definite indication, vaginal examination or cervical inspection is not made until the end of the sixth week. Cervical and perineal repairs are made at the time of delivery and the condition of the perineum is reported daily by the nurse.

When the patient is dismissed from the hospital, she is given directions about leg lifting, sitting up exercises, and the off-side bed position. For the latter, the face is down; the thighs and lower legs rest on the bed, separated enough to allow air to pass into the vagina; the trunk is over the side of the bed; and the head rests on the floor.

This position should be taken for at least five minutes morning and evening. The exercises should be increased daily unless the lochia becomes bright red, and in this case all exercise is to be temporarily reduced or discontinued. The off-side bed position is not discontinued. The patient is asked not to climb stairs for three weeks following delivery, and then she may be about the house the fourth week.

Patients are requested to come to the office six weeks after delivery. At this time the blood is checked and a pelvic examination is made. Treatment and advice is given as indicated. If all is well, they need not return until the end of six months, at which time they are again rechecked and advised to have pelvic checks at least once a year thereafter.

SUMMARY

1. Postpartum hemorrhage should be prevented if possible. In case of excessive blood loss, properly matched blood should be given promptly. The patient should be supported with plasma and other parenteral fluids until blood is available.

2. The patient should be kept under close observation until she has recovered from the anesthesia and sedation. No tight, wide binder should be used on the abdomen.

3. Management of the mother's breasts and the baby's feeding should be such that there are no breast complications and the baby is gaining satisfactorily and at least back to birth weight on his tenth day.

4. Mothers who are out of bed daily beginning on the first day postpartum recuperate more quickly. Involution is more rapid and the patients are stronger and look better on the seventh day postpartum.

5. This routine gives the nurses more opportunity to take care of patients in labor and those in their first days postpartum.

6. The patient should be properly informed about exercises, off-side bed position, and activities for the next several weeks.

7. Any necessary repairs of the cervix and perineum should be made immediately postpartum. If this is done a cervical inspection offers no advantage to the patient until the end of six weeks postpartum, at which time she should be checked.

8. Arrangements should be made for proper pediatric care.

9. An Rh factor determination of the baby's blood, especially in girls, should be done and recorded in the first week of life. If the test is Rh negative, it should be rechecked in about three months because blood characteristics are not well developed in the first few days of life.

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SECONDARY INFECTIONS RESULTING FROM ANTIBIOTIC THERAPY

Secondary infections, which are an important aspect of treatment with antibiotic drugs, may result from upsetting the natural balance of microbes in the throat and respiratory system, say two New York physicians.

Writing in the September 11 issue of *The Journal of the American Medical Association*, Emanuel Applebaum, M. D., and William A. Leff, M. D., of the Fourth Medical (New York University) Division, Bellevue Hospital, New York City, describe 2 patients treated with penicillin for pneumonia.

Penicillin therapy resulted in improvement of pneumonia symptoms and disappearance of the microbes which caused the disease, but this improvement was followed by the emergence of a secondary infection caused by a different type of microbe. Symptoms of the new infection disappeared when the patients received streptomycin, the physicians report. In both cases during the administration of streptomycin the original infection returned, necessitating supplementation with penicillin.

"The mechanism by which the new infection occurs is not clear," they say, "but may be due to a disturbance in the degree of bacterial antagonism which is normally present. It is possible that the removal of bacteria with a specific antibiotic causes insensitive organisms to increase not only in number but also in virulence."

REPAIR OF RECURRENT PROLAPSUS UTERI

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Twenty years ago I suggested a simple expedient for repairing cases of recurrent prolapsus uteri.[1] During the intervening years, in the course of many pelvic operations, I have used the method only three more times, but when indicated it is so needed and so simple that I venture to report it again.

It is almost unnecessary to review the factors involved, since if pelvic operations are properly done, only one patient in thousands will have that complete thinning out of tissues which challenges the physician's ingenuity to build a permanent support. Probably the absolutely essential factors in preventing prolapse are only two. One is to have a reasonably good perineum with repair of cystocele and rectocele. The second is equally or more important, and involves the anchoring of the so-called cardinal ligaments, which are heavy fibers in the base of the broad ligament, to the cervical stump, to the vaginal vault, or to each other. This procedure has been known for years but even yet is neglected by some operators. In hysterectomy the suture which catches the uterine arteries in many cases catches some of the fibers of the cardinal ligaments, which makes it wise to include this area in anchoring the tissues to the cervix or to the vaginal vault.

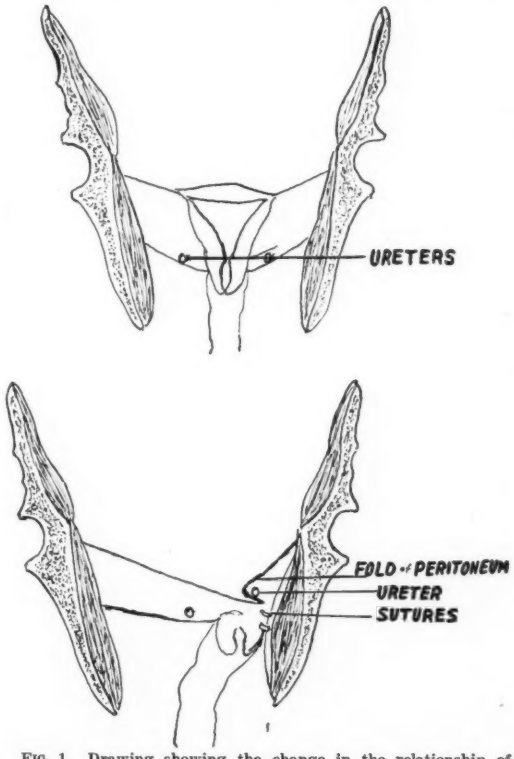

FIG. 1. Drawing showing the change in the relationship of the cervical stump and ureter. [After Knapp: Prolapse following Hysterectomy; New Technic for Its Repair, Northwest Med. 27: 226-228 (May) 1928.]

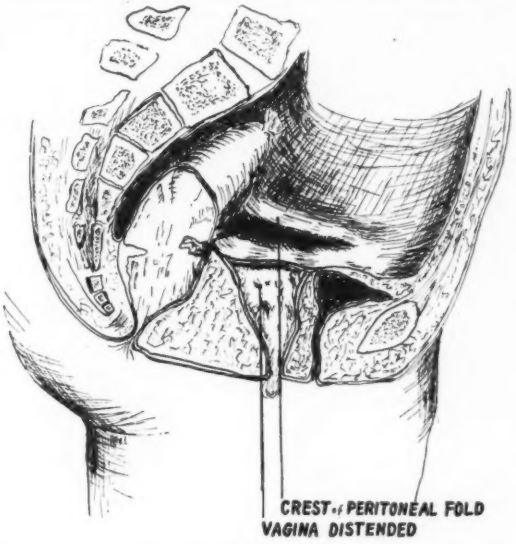

FIG. 2. Drawing showing the fold of peritoneum from inside the abdomen. [After Knapp: Prolapse following Hysterectomy; New Technic for Its Repair, Northwest Med. 27:226-228 (May) 1928.]

If prolapse has occurred after one operation, whether as the result of faulty technique or of the patient's condition, there is usually extremely thin tissue each side of the vaginal vault. The need of repair in these cases has caused the devising of many operations. Such cases are admittedly well treated by closing or almost closing the vagina to build a support from below, but for a woman who does not want this done, and it should not be done on young women, the common practice has been some form of attachment to the muscles of the abdominal wall. It is needless to discuss these operations except to say that they result in distortion and leave the patient in continual distress.

The first patient who presented this severe problem to me had been operated upon for prolapse previously. The prolapse had returned as an inverted cone, with the bladder following the anterior wall into the cone. It was evident that without almost closing the vagina the result would be poor if I followed

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ordinary methods. There was no tissue offering support on one side and the other was little better. I proceeded as for repair of cystocele with a median incision, separating the vaginal wall well to each side. The tissues between the apex and the pelvic wall were pushed up carefully so that the ureter would not be injured. Dissection was all done bluntly for the same reason. The little nubbin of tissue at the apex was then carried to the weaker side and sewed to the pelvic wall with two hard chromic sutures (fig. 1).

This maneuver was later studied on the cadaver and found to appear as suitable as it has proved to be in practice. A fold is created on one side of the pelvic floor as shown in figure 2. The thin tissue of the other side is made tight and slopes downward, directing the pelvic pressure toward the anchored side. The ureter lies above with per-

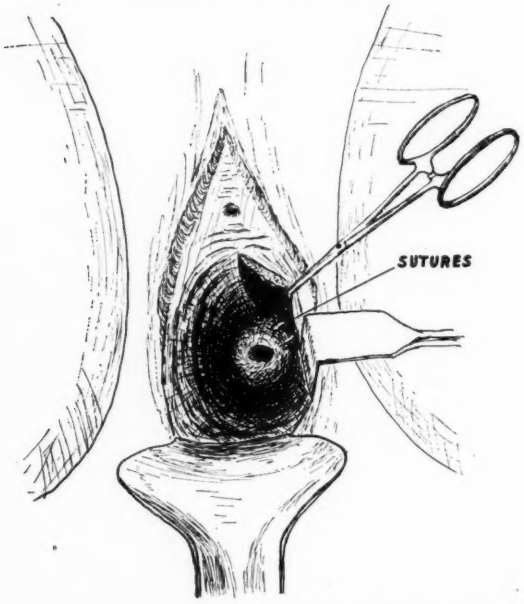

FIG. 3. Drawing showing the relatively small change in position of the cervix in one operation, with the cervix anchored to the wall. [After Knapp: Prolapse following Hysterectomy; New Technic for Its Repair, Northwest Med. 27:226-228 (May) 1928.]

haps a slight outward pull but no kinking. The actual displacement of the stump itself is less than would be expected, not much over 2 inches at most, and seemed to be 1.5 inches in 2 cases (fig. 3).

After the fixation the rest of the repair must be varied to suit the case. In the first case a somewhat better perineal body was also built, but the vaginal size was not altered. The repair remained in perfect shape for twenty years.

The prolapse in the second case had apparently recurred because no work had been done on the pelvic floor. The prolapse was more extensive but the tissues were better. There was a cervical stump. The side of this stump to be fixed was denuded, and the mucous membrane of the vagina was adjusted to it. After this it was possible to get good tissue from each side to place between bladder and vagina. There was a hernia into the posterior cul-de-sac. The peritoneum was separated and pushed up so that perineal repair was made directly on the rectum.

In the third case, which was of a woman over 60, the vagina was made small in addition to the anchoring.

The fourth operation was performed in a neglected primary prolapse. After doing a hysterectomy there were found insufficient tissues to hold the pelvic floor firmly, and the cervix was anchored to the wall.

I see no contraindications to the operation suggested here and much in its favor. Not one of the patients has shown any sign of recurrence. None has felt any pulling or distress. Coitus has been possible without pain.

REFERENCE

1. Knapp, D. R.: Prolapse following Hysterectomy; New Technic for Its Repair, Northwest Med. 27:226-228 (May) 1928.

ABSTRACT OF DISCUSSION

Dr. Allen McMurrey, Houston: It is not Dr. Knapp's intention in presenting this operation to divulge some novel surgical procedure, but rather to present a practical and at the same time simple step to deal with a distressing condition. The repair of prolapse is by no means a new subject; however, it is a subject which has never been entirely settled and to which from time to time are added suggestions which improve the results to be expected from recognized procedures. I am certain that Dr. Knapp's recommendations, if utilized properly, will materially add to the various operations that are now followed.

The majority of gynecologists and surgeons fall into the practice of utilizing one operation to try to correct all degrees and types of prolapse. This usually results in a low percentage of cures. For many years it has been contended that a patient with this malady is a great deal more fortunate if her surgeon exercises unusual knowledge in arriving at the proper operation to be performed to alleviate her disability, than if he exercises superb skill or dexterity in performing the operation. Of course the ideal situation would be to have a combination of both, which the patient is entitled to have.

The cause of prolapse is generally conceded to lie in the stretching and loss of tone of the supports of the organ, together with the injury to the tissues formed in the vaginal canal. There is another factor which is often overlooked, congenital weakness, for occasionally the condition is seen in a nulliparous and sometimes virginal woman. This is a particularly difficult type with which to deal, and the usual steps for cure often prove of no avail.

From the standpoint of the operator there are approximately five different types of prolapse:

1. The old, debilitated, poor surgical risk patient with any type of prolapse. This patient is best

treated by some mechanical device such as a pessary. This group becomes proportionately smaller as the physician's experience becomes broader in dealing with this problem.

2. The patient with a moderate degree of prolapse but presenting a large cystocele. This patient is more readily relieved by Watkin's interposition operation.

3. The most common type, the relatively young woman in the childbearing age who is anxious to retain the powers of procreation. If this type is to be relieved by surgery, the Fothergill operation will prove more successful.

4. The patient with procidentia where the whole uterus protrudes from the vagina. This patient is more readily relieved by a vaginal hysterectomy followed by a good anterior and posterior vaginal wall repair.

5. The elderly patient with no objection to the permanent closure of the vagina who has prolapse of any degree. The Le Fort operation is an excellent procedure in this case. This operation has a great deal more virtue than is usually conceded by some gynecologists. One advantage of extreme importance is that it is the least shocking of any of the procedures used for the cure of prolapse.

As already stated, while I am not familiar with Dr. Knapp's operation by name, I can readily see where it would be a definite adjunct in any of these operations.

MISCELLANEOUS

COMING MEETINGS AND CLINICS

State Medical Association of Texas, San Antonio, May 2-5, 1949. Dr. Tate Miller, Dallas, President; Dr. Harold M. Williams, 700 Guadalupe St., Austin, Secretary.

American Medical Association. Interim Session, St. Louis, November 30-December 3, 1948. Dr. R. L. Sensenich, South Bend, Ind., President; Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

NATIONAL AND REGIONAL

American Academy of Allergy. Dr. Will C. Sprain, New York, President; Dr. Theodore L. Squier, 424 East Wisconsin Ave., Milwaukee, Secretary.

American Academy of Dermatology and Syphilology, Chicago, December 4-9, 1948. Dr. Clyde L. Cummer, Cleveland, President; Dr. Earl D. Osborne, 471 Delaware Ave., Buffalo, N. Y., Secretary.

American Academy of General Practice, Cincinnati, March 7-9, 1949. Dr. Paul A. Davis, Akron, Ohio, President; Dr. Mac F. Cahal, 20 N. Wacker Drive, Chicago 6, Acting Executive Secretary.

American Academy of Neurological Surgery. Dr. William S. Keith, Toronto, Canada, President; Dr. T. C. Erickson, 1300 University Ave., Madison 5, Wis., Secretary.

American Academy of Ophthalmology and Otolaryngology. Dr. C. H. McCaskey, Indianapolis, President; Dr. W. L. Benedict, Mayo Clinic, Rochester, Minn., Secretary.

American Academy of Pediatrics, Atlantic City, November 20-23, 1948. Dr. John A. Toomey, Cleveland, President; Dr. C. G. Grulee, 636 Church St., Evanston, Ill., Secretary.

American Association for Thoracic Surgery. Dr. Alton Ochsner, New Orleans, President; Dr. Brian Blades, George Washington University School of Medicine, Washington, D. C., Secretary.

American Association of Genito-Urinary Surgeons. Dr. C. E. Burford, St. Louis, President; Dr. Norris J. Heckel, 122 S. Michigan Ave., Chicago, Secretary.

American Association of Obstetricians, Gynecologists, and Abdominal Surgeons. Dr. Robert D. Mussey, Rochester, Minn., President; Dr. L. A. Calkins, University of Kansas Medical Center, Kansas City 3, Secretary.

American College of Physicians, New York, March 28-April 1, 1949. Dr. Walter W. Palmer, New York, President; Mr. E. R. Loveland, 4200 Pine St., Philadelphia 4, Secretary.

American College of Radiology, Atlantic City, June 5, 1949. Dr. E. P. Pendergrass, Philadelphia, President; W. C. Stronach, 20 N. Wacker Drive, Chicago 6, Secretary.

American College of Surgeons. Dr. Dallas B. Phemister, Chicago, President; Dr. Paul B. Magnuson, 40 E. Erie St., Chicago 11, Secretary.

American Congress of Physical Medicine. Dr. H. Worley Kendell, Chicago, President; Dr. Richard Kovacs, 2 E. 88th St., New York 28, Secretary.

American Dermatological Association. Dr. Harry R. Foerster, Milwaukee, President; Dr. L. A. Brunsting, 102 2nd. Ave., S. W., Rochester, Minn., Secretary.

American Gastro-Enterological Association, Atlantic City, June 3-4, 1949. Dr. A. F. R. Andresen, Brooklyn, President; Dr. Dwight L. Wilbur, 655 Sutter St., San Francisco, Secretary.

American Gynecological Society. Dr. Edmund A. Schumann, Philadelphia, President; Dr. Howard Taylor, Jr., 842 Park Ave., New York 21, Secretary.

American Hospital Association. Mr. Joseph G. Norby, Milwaukee, President; Mr. George P. Bugbee, 18 E. Division St., Chicago, Executive Secretary.

American Laryngological, Rhinological and Otological Society, Chicago, April, 1949. Dr. John J. Shea, Memphis, Tenn., President; Dr. C. S. Nash, 277 Alexander St., Rochester 7, N. Y., Secretary.

American Neurological Association. Dr. Stanley Cobb, Boston, President; Dr. H. Houston Merritt, 710 W. 168th St., New York 32, Secretary.

American Ophthalmological Society. Dr. Henry C. Haden, Houston, President; Dr. W. S. Atkinson, 129 Clinton St., Watertown, N. Y., Secretary.

American Orthopedic Association. Dr. Robert I. Harris, Toronto, Canada, President; Dr. C. Leslie Mitchell, Henry Ford Hospital, Detroit 2, Secretary.

American Otological Society. Dr. Marvin F. Jones, New York, President; Dr. Gordon D. Hoople, 713 E. Genesee St., Syracuse 3, N. Y., Secretary.

American Pediatric Society. Dr. Grover F. Powers, New Haven, Conn., President; Dr. Henry G. Poncher, 1819 W. Polk St., Chicago 12, Secretary.

American Proctologic Society. Dr. George H. Thiele, Kansas City, Mo., President; Dr. Vernon G. Jeurink, 1612 Tremont Pl., Denver 2, Secretary.

American Psychiatric Association. Dr. Winfred Overholser, Washington, D. C., President; Dr. Leo H. Bartemeier, General Motors Bldg., Detroit, Secretary.

American Public Health Association, Boston, November 8-12, 1948. Dr. Martha M. Eliot, Washington, D. C., President; Dr. R. M. Atwater, 1790 Broadway, New York 19, Secretary.

American Roentgen Ray Society. Dr. J. B. Edwards, St. Louis, President; Dr. H. Dabney Kerr, University Hospital, Iowa City, Secretary.

American Society of Anesthesiologists, St. Louis, November 4-6, 1948. Dr. Charles F. McCuskey, Los Angeles, President; Dr. Curtiss B. Hickcox, 745 Fifth Ave., New York 22, Secretary.

American Society of Clinical Pathologists. Dr. Theodore J. Curphey, Hempstead, N. Y., President; Dr. A. S. Giordano, 531 N. Main St., South Bend, Ind., Secretary.

American Surgical Association. Dr. Elliott C. Cutler, Boston, President; Dr. W. M. Firor, Johns Hopkins Hospital, Baltimore 5, Secretary.

American Urological Association, Los Angeles, May 16-19, 1949. Dr. Charles C. Higgins, Cleveland, President; Dr. T. D. Moore, 899 Madison Ave., Memphis 3, Tenn., Secretary.

Association of American Physicians, Atlantic City, May 3-4, 1949. Dr. Francis G. Blake, New Haven, President; Dr. H. M. Thomas, Jr., 1201 N. Calvert St., Baltimore 2, Secretary.

Central Neuropsychiatric Association. Dr. William C. Menninger, Topeka, Kan., President; Dr. Lee Eaton, Mayo Clinic, Rochester, Minn., Secretary.

International College of Surgeons, U. S. Chapter, St. Louis, November 15-20, 1948. Dr. Herbert Acuff, Knoxville, Tenn., President; Dr. Louis J. Gariepy, 16401 Grand River Ave., Detroit 27, Secretary.

National Tuberculosis Association, Dr. Herbert L. Manz, Kansas City, Mo., President; Dr. H. Stuart Willis, 1790 Broadway, New York 19, Secretary.

Radiological Society of North America. Dr. L. Henry Garland, San Francisco, President; Dr. D. S. Childs, Medical Arts Bldg., Syracuse 2, N. Y., Secretary.

Southern Medical Association. Dr. A. LeDoux, New Orleans, President; C. P. Loranz, Empire Bldg., Birmingham, Ala., Secretary.

Southern Psychiatric Association, Dallas, December 6-7, 1948. Dr. Guy F. Witt, Dallas, President; Dr. Newdigate M. Owensby, 384 Peachtree St. N. E., Atlanta, Ga., Secretary.

Southern Surgical Association, White Sulphur Springs, December 7-9, 1948. Dr. E. P. Lehmann, Charlottesville, Va., President; Dr. Alfred Blalock, Johns Hopkins Hospital, Baltimore 5, Secretary.

Southwest Allergy Forum, El Paso, April 4-5, 1949. Dr. Sim Hulsey, Fort Worth, President; Dr. O. E. Egbert, First National Bank Bldg., El Paso, Secretary.

Southwestern Medical Association. Dr. Leslie M. Smith, El Paso, President; Dr. Wickliffe R. Curtis, First National Bank Building, El Paso, Secretary.

Southwest Regional Cancer Conference, Fort Worth, November 9, 1949. Secretary, 209 Medical Arts Bldg., Fort Worth.

United States-Mexico Border Public Health Association, Nogales, Ariz., and Nogales, Mexico, 1949. Dr. Victor Ocampo Alonzo, Hermosillo, Mexico, President; Dr. M. F. Haralson, 314 U. S. Court House, El Paso, Secretary.

STATE

Texas Association of Obstetricians and Gynecologists, Dallas, 1949. Dr. Julius McIver, Dallas, President; Dr. George F. Adam, 4115 Fannin, Houston, Secretary.

Texas Chapter, American Academy of General Practice. Dr. J. B. Copeland, San Antonio, President; Dr. W. P. Higgins, Jr., Medical Arts Bldg., Fort Worth, Secretary.

Texas Chapter, American College of Chest Physicians. Dr. Elliott Mendenhall, Dallas, President; Dr. Charles J. Koerth, Kerrville, Secretary.

Texas Club of Internists. Dr. Julian C. Barton, San Antonio, President; Dr. Victor E. Schulze, 219 S. Magdalen St., San Angelo, Secretary.

Texas Dermatological Society, Beaumont, October 3, 1948. Dr. D. T. Gandy, Houston, President; Dr. W. Harris Connor, 601 Medical Arts Bldg., Houston, Secretary.

Texas Heart Association. Dr. Walter B. Whiting, Wichita Falls, President; Dr. Merritt B. Whitten, 1421 Medical Arts Bldg., Dallas, Secretary.

Texas Hospital Association, Galveston, April 19-21, 1949. Mr. C. J. Hollingsworth, Lubbock, President; Mrs. Ruth Barnhart, 2210 Main St., Dallas, Secretary.

Texas Neuropsychiatric Association. Dr. M. J. Cooper, San Antonio, President; Dr. David Wade, 604 Capital National Bank Bldg., Austin, Secretary.

Texas Orthopedic Association, San Antonio, May 2, 1949. Dr. Ruth Jackson, Dallas, President; Dr. Margaret Watkins, 3629 Fairmount St., Dallas, Secretary.

Texas Pediatric Society, San Antonio, October, 1949. Dr. John Glen, Houston, President; Dr. James Walker, 3616 Tulsa Way, Fort Worth, Secretary.

Texas Public Health Association, San Antonio, February 20-23, 1949. Dr. Austin E. Hill, San Antonio, President; Mr. Earle W. Sudderth, Dallas County Health Department, Court House, Dallas, Executive Secretary.

Texas Radiological Society, Fort Worth, January 7-8, 1949. Dr. L. M. Garrett, Corpus Christi, President; Dr. R. P. O'Bannon, 650 Fifth Ave., Fort Worth, Secretary.

Texas Railway and Traumatic Surgical Association, San Antonio, May 2, 1949. Dr. Denman C. Hucherson, Houston, President; Dr. W. F. Parsons, First National Bank Bldg., Fort Worth, Secretary.

Texas Rheumatism Association. Dr. Howard C. Coggeshall, Dallas, President; Dr. J. Paul Thomas, Medical Arts Bldg., Dallas, Secretary.

Texas Society for Mental Hygiene, Dallas, March 3-5, 1949. Dr. Ozro T. Woods, Dallas, President; Mrs. Elizabeth F. Gardner, 1617 Watchhill Road, Austin 21, Executive Secretary.

Texas Society of Anesthesiologists. Dr. J. C. Youngblood, Houston, President; Dr. H. C. Slocum, 928 Strand, Galveston, Secretary.

Texas Society of Gastroenterologists and Proctologists, San Antonio, May 2, 1949. Dr. Alvin Baldwin, Dallas, President; Dr. Carl Giesecke, 1602 Nix Professional Bldg., San Antonio, Secretary.

Texas Society of Ophthalmology and Otolaryngology, Fort Worth, December 3-4, 1948. Dr. S. N. Key, Sr., Austin, President; Dr. John L. Matthews, 929 Nix Professional Bldg., San Antonio, Secretary.

Texas Society of Pathologists, Dallas, January 30, 1949. Dr. W. W. Coulter, Sr., Houston, President; Dr. C. T. Ashworth, 604 Medical Arts Bldg., Fort Worth, Secretary.

Texas State Urological Society, Temple. Dr. Michael K. O'Heeron, Houston, President; Dr. E. O. Bradfield, Scott and White Clinic, Temple, Secretary.

Texas Surgical Society, Houston, April 5-6, 1949. Dr. E. P. Bunkley, Stamford, President; Dr. Truman G. Blocker, 927 Strand, Galveston, Secretary.

Texas Tuberculosis Association. Dr. Elliott Mendenhall, Dallas, President; Miss Pansy Nichols, 700 Brazos, Austin, Executive Secretary.

DISTRICT

Second District Society. Dr. R. B. G. Cowper, Big Spring, President; Dr. Carl Uthoff, Big Spring, Secretary.

Third District Society, Amarillo, April 12-13, 1949. Dr. C. E. High, Pampa, President; Dr. Kenneth Flamm, Amarillo, Secretary.

Fourth District Society, San Angelo, October, 1949. Dr. J. C. Young, Coleman, President; Dr. Charles F. Bailey, Ballinger, Secretary.

Fifth and Sixth Districts Society, Corpus Christi, July, 1949. Dr. D. R. Knapp, Kerrville, President; Dr. Charles Tennison, Nix Professional Building, San Antonio, Secretary.

Seventh District Society. Dr. David Wade, Austin, President; Dr. Joe W. Bailey, 1411 San Antonio St., Austin, Secretary.

Eighth, Ninth and Tenth Districts Society. Dr. T. O. Woolley, Orange, President; Dr. James Greenwood, Jr., 518 Medical Arts Bldg., Houston 2, Secretary.

Eleventh District Society. Dr. Lynn Hilburn, Henderson, President; Dr. C. B. Young, 929 S. Confederate, Tyler, Secretary.

Twelfth District Society. Dr. R. R. White, Temple, President; Dr. H. F. Connally, Jr., Amicable Bldg., Waco, Secretary.

Thirteenth District Society, Mineral Wells, November 11-12, 1948. Dr. Fred Harrell, Olney, President; Dr. S. W. Wilson, Medical Arts Bldg., Fort Worth, Secretary.

Fourteenth District Society, Ennis, January 11, 1949. Dr. W. I. Southerland, Sherman, President; Dr. John Bagwell, Medical Arts Building, Dallas, Secretary.

Fifteenth District Society. Dr. W. S. Terry, Jefferson, President; Dr. James Harris, Marshall, Secretary.

CLINICS

Dallas Southern Clinical Society, Dallas, March 14-17, 1949. Miss Betty Elmer, Medical Arts Bldg., Dallas 1, Executive Secretary.

International Post-Graduate Medical Assembly of Southwest Texas, San Antonio, January 25-27, 1949. Dr. John J. Hinchey, 643 Moore Bldg., San Antonio 5, Secretary.

North Texas-Southern Oklahoma Fall Clinical Conference, Wichita Falls, October 19, 1949. Dr. Charles H. Brown, Wichita Falls, Program Chairman.

Oklahoma City Clinical Society Conference, Oklahoma City, 1949. Muriel R. Waller, 512 Medical Arts Bldg., Oklahoma City 2, Executive Secretary.

Post Graduate Medical Assembly of South Texas, Houston, December 7-9, 1948. Dr. E. Trowbridge Wolf, 229 Medical Arts Bldg., Houston, Secretary.

TEXAS PEDIATRIC SOCIETY

The Texas Pediatric Society held its fall clinical meeting in Dallas, October 15-16, with a registration of 196. The meeting was under the auspices of district 2 of the society. Two out-of-state physicians and four Dallas physicians were guest speakers and were presented with fountain pens and engraved electric clocks by the society at a dinner dance the evening of October 15. Wives of the physicians participated in the evening's entertainment and in a luncheon that day.

Dr. John Glen, Houston, succeeded Dr. C. B. Alexander, San Antonio, as president; Dr. John E. Ashby, Dallas, was named president-elect; Dr. James Walker, Fort Worth, secretary; Dr. W. H. Bradford, Dallas, treasurer; and Dr. Robert Moore, Dallas, councilor of district 2. It was decided to hold the 1949 meeting in October in San Antonio.

The scientific program was as follows:

October 15

Dr. Byron York, Houston, presiding

Intestinal Obstruction in Early Infancy—Dr. W. W. Zuelzer, Professor of Pediatric Research, and Director of Laboratory and Anemia Clinic, University of Michigan Medical School, Detroit.

Certain Aspects of Protein Deprivation—Dr. A. A. Weech, Professor of Pediatrics, University of Cincinnati, and Director, Children's Hospital Research Foundation, Cincinnati, Ohio.

Cerebral Palsy Center in Dallas—Dr. Margaret Watkins, Instructor in Orthopedic Surgery, Southwestern Medical College, and Medical Director, Dallas Cerebral Palsy Center, Dallas.

Diagnosis of Hematologic Problems in Infancy and Childhood—Dr. W. W. Zuelzer.

Dr. Thomas McCrummen, Austin, presiding

Endocrine Disorders in Childhood—Dr. Arthur Grollman, Professor of Medicine and Pharmacology, Southwestern Medical College, Dallas.

Respiratory Failure in Newborn—Dr. W. W. Zuelzer.

Hypocalcemia in Infancy—Dr. A. A. Weech.

October 16

Dr. L. O. Godley, Fort Worth, presiding

Newer Trends in Management of Burns—Dr. Carl Moyer, Professor of Experimental Surgery, Southwestern Medical College, Dallas.

Recent Advances in Antibiotic Therapy—Dr. Andres Goth, Associate Professor of Pharmacology, Southwestern Medical College, Dallas.

Pathology and Complications of Pancreatic Fibrosis—Dr. W. W. Zuelzer.

Psychogenic Factors in Anorexia and Other Behavior Problems—Dr. A. A. Weech.

TEXAS ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

The nineteenth annual meeting of the Texas Association of Obstetricians and Gynecologists was held in Houston, October 15-16 with eighty-two members and forty-five visitors present.

The association elected Dr. Herbert Beavers, Fort Worth, as president-elect; Dr. J. N. Burditt, Abilene, vice-president; and Dr. George F. Adam, Houston, secretary. Dr. Julius McIver, Dallas, succeeded to the presidency. The 1949 meeting will be held in Dallas.

The scientific program, for which the guest speakers were Dr. Bayard Carter, professor of obstetrics and gynecology at Duke University, Durham, N. C., and Dr. Andrew A. Marchetti, professor of obstetrics and gynecology at Georgetown University Medical Center, Washington, D. C., was as follows:

October 15

Myomectomy in Pregnancy, Case Report—Dr. Erwin O. Strassman, Houston.
New Procedure for Correction of Urinary Stress Incontinence—Dr. Andrew A. Marchetti, Washington, D. C.
Colpocleisis—Dr. Arthur Faris and Dr. Allen McMurrey, Houston.
Evaluation of Culdoscopy—Dr. C. Alsworth Calhoun, Houston.
Luncheon with questions answered by Dr. Andrew A. Marchetti, Washington, D. C.
Carcinoma of Cervix Uteri—Dr. Bayard Carter, Durham, N. C.
Effect of Hysterectomy on Carcinoma of Cervix—Dr. John Wall, Houston.
Recent Advances in Radiotherapy—Dr. Gilbert Fletcher, Houston.
Gynecological Aspects of Low Back Pain—Dr. Roy L. Grogan, Fort Worth.
Early Clinical and X-Ray Diagnosis of Fetal Malformations—Dr. John Walter Jones, Texarkana.
Cocktail Party and Dinner: Treatment of Premature Separation of Normally Implanted Placenta—Dr. Bayard Carter, Durham, N. C.

October 16

C. R. Hannah Lecture—Dr. Willard R. Cooke, Galveston.
Surgical Aspects of Sterility in the Female—Dr. Denton Kerr, Houston.
Adolescent Primigravida—Dr. Andrew A. Marchetti, Washington, D. C.
Carcinoma of Vulva—Dr. Bayard Carter, Durham, N. C.

The program on October 16 was held at the Baylor University College of Medicine Auditorium, and Dr. Walter H. Moursund, Sr., dean of the college, welcomed the visitors.

PSYCHIATRISTS TO MEET IN DALLAS

The Southern Psychiatric Association will hold its tenth annual meeting December 6-7 in Dallas with Hotel Adolphus as headquarters. Physicians of Texas, especially psychiatrists and neurologists, including those associated with the Veterans Administration and the military services, have been given a cordial invitation to attend by Dr. Arthur J. Schwenkenburg, Dallas, chairman of the arrangements committee.

No registration fee will be charged for the program, which will feature several distinguished guests from throughout the Unied States and papers by members from various southern states.

Dr. Guy F. Witt, Dallas, is president of the association.

LIBRARY NOTES

PACKAGE SERVICE

The package library consists of collections of reprints and other periodical material on various subjects, prepared for lending to members of the Association. Requests for packages should be addressed "Library, State Medical Association of Texas, 700 Guadalupe Street, Austin, Texas." Twenty-five cents in stamps should be enclosed with the request to cover postage and part of the expense of collecting the material. Packages are allowed to remain in the hands of the borrower for 14 days.

ACCESSIONS

The following additions were made to the Library during October:

Reprints received, 1,351.
Journals received, 272.
Books received, 12.

Psychiatry in General Practice, by Thorner, and *A. M. A. Interns' Manual*, by A. M. A., from W. B. Saunders, Philadelphia.

The Commonsense Psychiatry of Dr. Adolf Meyer, by Lief (editor), and *A Textbook of General Physiology*, by Mitchell, from McGraw-Hill Book Company, New York.

Virus Diseases of Man, by Rooyen and Rhodes, from Thomas Nelson & Sons, New York.

The Venous Pulse and Its Graphic Recording, by Groedel, from Brooklyn Medical Press, New York.

Occupational Medicine Source Book, by Licht (editor); *Manual of Urology*, fourth edition, by LeComte; and *District Nursing*, by Merry and Irven, from Williams & Wilkins, Baltimore.

Technique of Treatment for the Cerebral Palsy Child, by Egel, from C. V. Mosby, St. Louis.

A Brief History of the South Carolina Medical Association, by Waring, from South Carolina Medical Association, Charleston.

Manual for Medical Records Librarians, second edition, by Huffman, from Physicians' Record Company, Chicago.

SUMMARY OF SERVICE

Local users and visitors, 36.	Borrowers by mail, 47.
Items consulted, 598.	Packages mailed, 49.
Items borrowed, 126.	Items mailed, 387.

Total number of items consulted and loaned, 1,111.

MOTION PICTURE FILM LIBRARY

Motion picture films on medical subjects, 16 mm., both silent and sound, some in color, and suitable for either medical or lay audiences, are available for loan to county medical societies, hospital staffs, or individual physicians, on request. Borrowers will be required to pay only the cost of shipment of the films, by express, with insurance, and for any damage to films while in the hands of the borrower.

Requests for films should be addressed to "Motion Picture Film Library, State Medical Association of Texas, 700 Guadalupe Street, Austin, Texas." A list of available films, with descriptions, will be furnished on request.

The following motion picture films were loaned by the Film Library during October:

Adolescence, Introduction to (Mead Johnson)—Drs. Hyslop and Hyslop, Del Rio.

Anesthesia, Novocain, in Obstetrics (Winthrop Chemical Company)—Dr. G. A. Burgess, McAllen.

Anesthesia, Regional (Winthrop Chemical Company)—Drs. Kelly and Kelly, Pampa.

Appendicitis in Childhood (Mead Johnson)—Scott and White Hospital, School of Nursing, Temple.

As Others See Us (American Hospital Association)—Brackenridge Hospital, School of Nursing, Austin, and Drs. Hyslop and Hyslop, Del Rio.

Blood Transfusion (British Information Services)—Pre-Medical Association, Southwestern University, Georgetown, and Drs. Hyslop and Hyslop, Del Rio.

Breech Extraction with Forceps (Mead Johnson)—Kelly and Kelly Clinic, Pampa, and Hamlin Memorial Hospital Staff, Hamlin.

Bronchial Asthma (Fougera & Company)—Drs. Hyslop and Hyslop, Del Rio.

Chest Disease, Surgery in (British Information Services)—Brackenridge Hospital, School of Nursing, Austin, and Drs. Hyslop and Hyslop, Del Rio.

Daily Battle (National Foundation for Infantile Paralysis)—Victoria Hospital, School of Nursing, Victoria.

Empyema, The Treatment of (Mead Johnson)—Brackenridge Hospital, School of Nursing, Austin.

Eyes for Tomorrow (Hurst Hospital & Clinic)—O'Donnell Parent-Teacher's Association, Lamesa.

Eyes, Your Children's (British Information Services)—Nordheim Parent-Teacher's Association, Nordheim.

Folvite in Anemia (Lederle Laboratories)—Dr. C. H. Godard, Bastrop.

Forty Billion Enemies (Westinghouse)—Harris Hospital, School of Nursing, Fort Worth.

Golden Glory (Standard Brands)—Health Education Group, San Antonio.

Heart Disease, Oxygen Therapy in (Linde Air Products)—Brackenridge Hospital, School of Nursing, Austin, and Drs. Hyslop and Hyslop, Del Rio.

Human Fertility (Ortho-Products Inc.) — Drs. Kelly and Kelly, Pampa, and F. A. Orgain Memorial Hospital, Bastrop.

Hypodermic Syringes and Needles: Their Care and Function (Becton, Dickinson & Co.)—Dr. J. E. Johnson, Lamesa, and Drs. Hyslop and Hyslop, Del Rio.

Hysterectomy (Mead Johnson)—Dr. G. A. Burgess, McAllen.

Infantile Paralysis, Orthopedic Treatment of (Mead Johnson) — Victoria Hospital, School of Nursing, Victoria.

Lesions of Vulva, Vagina and Cervix (Dr. Karl John Karnaky)—Tacoma General Hospital, School of Nursing, Tacoma, Wash.

Mastoid Surgery (Dr. Louis Daily)—Drs. Hyslop and Hyslop, Del Rio.

Mechanism of Cell Division (War Department)—Pre-Medical Association, Southwestern University, Georgetown.

Modern Nutrition (E. R. Squibb & Son)—F. A. Orgain Memorial Hospital, Bastrop.

Nasal Sinusitis (Fougera & Company)—Drs. Hyslop and Hyslop, Del Rio.

Normal Delivery (Mead Johnson)—Hamlin Memorial Hospital Staff, Hamlin, Brooks-Duval-Jim Wells Counties Medical Society, Alice.

Premature Infant, The Care of (Mead Johnson)—Brooks-Duval-Jim Wells Counties Medical Society, Alice.

Roentgen Pelvimetry (Mead Johnson)—Brooks-Duval-Jim Wells Counties Medical Society, Alice.

Spontaneous Delivery (Mead Johnson)—Hamlin Memorial Hospital Staff, Hamlin.

Stitch in Time (Sears-Roebuck)—Nordheim Parent-Teacher's Association, Nordheim.

Sutures Since Lister (Johnson & Johnson)—Kelly and Kelly Clinic, Pampa.

TB, This Is (Texas Tuberculosis Association)—O'Donnell Parent-Teacher's Association, Lamesa.

Trichomonal and Monilial Vaginitis (Searle Co.)—Brackenridge Hospital Staff, Austin.

Tuberculosis, Diagnostic Procedure in (Texas Tuberculosis Association)—Drs. Hyslop and Hyslop, Del Rio.

Urinary Antisepsis, Progress in (Mead Johnson)—Drs. Hyslop and Hyslop, Del Rio.

Uterosalpingography (Fougera & Company)—Drs. Hyslop and Hyslop, Del Rio, and Dr. N. L. Schiller, Austin.

Uterosalpingography, Serial (Fougera & Company)—Drs. Hyslop and Hyslop, Del Rio.

Varicose Veins, Treatment of (Searle Co.)—Tarrant County Medical Society, Fort Worth.

Varicose Veins and Their Complications (Becton, Dickinson & Company)—Drs. Hyslop and Hyslop, Del Rio, and Dr. N. L. Schiller, Austin.

Vitamins, and Some Deficiency Diseases (Lederle Laboratories)—Dr. N. L. Schiller, Austin.

When Bobby Goes to School (Mead Johnson)—Medical Auxiliary, Lufkin; Parent-Teacher's Council, McKinley School, Amarillo; and Bellville Parent-Teacher's Association, Bellville.

X-Ray Routine Admission in General Hospitals (Texas Tuberculosis Association)—Dr. N. L. Schiller, Austin.

X-Ray, Technic of Group Services (Texas Tuberculosis Association)—Dr. N. L. Schiller, Austin.

BOOK REVIEWS

[1]**Ophthalmology in the War Years.** Volume II. By Meyer Wiener, M.D. Cloth, 977 pages. Price $16. Chicago, Year Book Publishers, 1948.

This second volume completes the review of ophthalmic literature produced during the last war, and embraces much that was not contained in the first volume. The stress of war conditions did not permit all of value to be published until hostilities ceased.

This is truly a monumental work. The author is eminently fitted for such a vast undertaking. The thirty-seven co-authors are authorities in the special fields of their writings, and a great amount of work has been done by each. The bibliographic references alone number 7,082.

The preface states that it is hoped this volume, along with the first, will be of value not only to those who did not find time to read all of the available literature during the war years and to those who were unable to obtain it, but to those who wish to delve quickly into the recent literature when writing a paper or preparing an address or who wish to have a resumé of advances in all branches of ophthalmology during the period of the war and up to June, 1946.

This hope has been accomplished in a gratifying manner and the two volumes truly are an encyclopedia of the world's ophthalmic literature from 1940 to 1946.

[2]**Human Physiology.** By F. R. Winton, M.D., D.Sc., and L. E. Bayliss, Ph.D. Cloth, 592 pages, illustrated, third edition. Price $7. Philadelphia and Toronto, The Blakiston Company, 1948.

This brief text is a concise, lucid presentation of the essentials of human physiology. The over-all organization of the preceding edition has been largely preserved but certain sections have been completely rewritten. In other instances, only those changes necessary to bring the text up to date have been made. Subject matter is presented in a well integrated and readable manner, and, despite the large number of contributors to the text, it is free of repetition or important omissions. Emphasis is on physiologic principles rather than on their application.

The apportionment of space to the various subdivisions of the subject is about as in the preceding edition, representing a fairly good balance, though one might wish to see certain sections such as those on circulation and respiration expanded somewhat with perhaps relatively less space devoted to muscle, nerve, central nervous system, and special senses. This is, of course, entirely a matter of opinion.

For a book of this length, a remarkable amount of information is presented with clarity, and cross references are frequently used when concepts expounded elsewhere in the text are introduced. In general, oversimplification and dogmatism are not serious faults, though the authors at times present considerable factual material without citing the experimental evidence.

[3]**War, Politics, and Insanity.** By C. S. Bluemel, M.A., M.D., F.A.C.P., M.R.C.S. (Eng.). Cloth, 121 pages. Price $2. Denver, World Press, Inc., 1948.

This volume is addressed to the general public, not primarily to the medical profession. It reviews various theories of the origin of wars and presents the author's view that wars are brought about largely through irresponsible leadership. He sees certain combined personality traits revealed in militant leaders throughout world history; these traits are aggressiveness and obsessive-compulsive reaction. The latter reaction he defines as a pathologic persistence.

He sketches the careers of several national leaders of the present and the past, both peaceful and warlike, showing that they have various degrees and pro-

[1]Reviewed by William E. Vandever, M.D., El Paso.

[2]Reviewed by Robert W. Lackey, Ph.D., Dallas.

[3]Reviewed by James P. Molloy, M.D., Houston.

portions of aggressiveness and pathologic persistence. The most benign of the leaders are those who are less characterized by aggressiveness and those who are mentally sound. The most dangerous are the most aggressive and psychotic.

The author has unearthed a wealth of interesting material about several national leaders. The excesses of feeling and the distortion of thinking shown by some of their utterances are really remarkable. He finds the world suffering from poor leadership. This he attributes largely to the relatively passive tendency of the majority, and the dominance and aggressiveness of a few who, even in democracies, manage to get into positions of power.

He believes that our own so-called representative government fails to give true representation. He proposes a completely different structure of government for our nation and for the occupied countries of Europe as they will be emerging into self-rule again. This government will be built upon the choice of a group of intelligent, mature, trained leaders, free from personality distortions, all of them having university education, and having had special courses to fit them for their great responsibilities. The views of this larger group of "Senior Citizens" will be finally expressed by the "Cabinet," consisting of five members. Their decrees will be final. He feels that if all the world were to be ruled by selective governments, composed of normal men, there would surely be peace.

Several questions arise in the mind of the reviewer. Will all aggressive men be excluded by the plan of selection? Is the preliminary choice and screening in the best hands when it is to be done by the faculties of universities? Is it possible to establish a ruling group which may not in time work for its own advantage?

[4]**Control of Pain with Saddle Block and Higher Spinal Anesthesia.** By J. H. Walton, M.D. Cloth, 48 pages, illustrated. Summit, N. J., Ciba Pharmaceutical Products, Inc.

Any one interested in doing saddle block and spinal anesthesia with nupercaine will find this little book of value. It is concise, the technique is easy to follow, and the illustrations are good. The advantages and disadvantages of these types of anesthesia are well given.

[5]**Successful Marriage.** By Morris Fishbein, M.D., and Ernest W. Burgess, Ph.D. Cloth, 515 pages. Price $3.50. Garden City, N. Y., Doubleday & Company, 1947.

Here is a book, written by a formidable list of the most distinguished group of specialists on the subject of marriage and its problems. There is not one phase of the problems of a successful marriage that has been omitted. The new profession of marriage counseling, as brought out, involves physiologic, psychologic, and sociologic problems, which the practitioner of today is called upon to serve. It is a readable book, written with exceptional frankness, including the moral aspects of marriage. The chapters on fertility, pregnancy, and the birth of the baby are exceedingly good, are clear, and will answer many questions the newly married couple usually ask their physician.

Dr. Richard Jenken's chapter on behavior problems, if followed, would do much to curtail juvenile delinquency resulting from inadequate marital adjustments. To date, this is one of the finest books written on this subject, unique in its presentation, and understandable to the average layman. It will be worth while for every doctor to recommend this excellent book, not only to the prospective bride and bridegroom, but to their parents as well.

[4]Reviewed by Marvin E. Adams, M.D., Fort Worth.
[5]Reviewed by Harold B. Mindell, M.D., Fort Worth.

[6]**Adolescent Sterility.** By M. F. Ashley Montagu, M.D. Cloth, 148 pages. Price $3.50. Springfield, Ill., Charles C. Thomas Publishers, 1946.

In an excellent monograph composed of 118 pages of text, 10 pages of appendix, 13 pages of bibliography, and 6 pages of index, the author, a noted anatomist and anthropologist, has brought together the evidence from scientific sources supporting his thesis that for an appreciable period after puberty there is both a relative sterility (failure of conception) and a relatively large reproductive loss from spontaneous abortions and stillbirths in females of several mammalian species, including man. Moreover, maternal behavior is found to be defective in very young mothers.

The author attempts to explain the how and why of this infertile period, and evidence is presented which indicates that the capacity to produce mature ova (nubility) is not attained until some time after the appearance of the first estrus or menarche. A discussion of the hormonal control of ovulation follows. Also, the apparent inconsistency of human precocious puberty and conception is discussed, with emphasis upon physiologic, rather than chronologic, age. The period between puberty and nubility is called the "adolescent sterility interval," a period in development not heretofore recognized. Thus, the period of adolescence is made up of this interval and of the period of nubility and this is followed by the period of maturity, marked by the cessation of growth. Duration of the sterility interval in the mouse, monkey, chimpanzee, and man, in that order, would appear to be one month, one to twelve months, four months to more than two years, and one month to seven years. Variability is the rule. Exceptional cases of conception before menarche (that is, no adolescent sterility interval) are on record.

[6]Reviewed by J. K. Lamar, Ph.D., Galveston.

NEWS

Contributions to this department will be appreciated. News should be of general medical interest, such as public health activities, new hospitals, personal items of more than local value, etc. News for a particular number of the JOURNAL should be in the hands of the Editor not later than the fifteenth of the preceding month.

The Texas Club of Internists met in Ann Arbor, Mich., October 11-16, for a scientific program furnished by the staff of the Department of Internal Medicine of the University of Michigan Medical School. A variety of medical subjects were covered in lectures, clinics, and conferences.

The San Antonio Obstetrical and Gynecological Society was reactivated October 6 when interested physicians met in called session. Offcers were elected as follows: Drs. Eugene Chapman, president; Kent Hunt, first vice-president; C. D. Henry, second vice-president; and John W. Worsham, secretary-treasurer. It was decided to hold meetings on the first Monday of each month at the Bexar County Medical Library. Membership is open "to all those interested in improving the standards of maternity care and the treatment of conditions peculiar to women."

The Waco Pediatrics Society, the first medical specialty organization in Waco's history, was organized in September, according to the Waco *News-Tribune*. Dr. M. C. Carlisle was elected president; Dr. F. William Hoehn, secretary. Ultimate aim of the organization was said to be construction of a children's hospital in Waco. Other purposes are (1) to work for the improvement of pediatrics, (2) to make suggestions for improved hospital service, (3) to stimulate interest in the prevention and control of contagious diseases, (4) to attempt to form-

ulate a plan for better care of indigent children, and (5) to act as a unit to disseminate pediatrics information to medical meetings.

Dr. Chester U. Callan, Rotan general practitioner, was presented in the October 9 issue of *The Saturday Evening Post* as an example of the type of rural physician needed so badly throughout the nation today. Already appreciative of Dr. Callan and wanting to show their satisfaction with the publicity given to him by the *Post*, the people of Rotan set aside October 8 as "Doc Callan Day," according to the Abilene *Reporter-News*. An hour program for which stores closed paid tribute to the physician, with Dr. Tate Miller, Dallas, President of the State Medical Association as chief speaker. A dinner for Dr. Callan and out of town guests and dedication of the high school football game to him that evening were other high points of the day. Abilene Christian College, of which Dr. Callan is a graduate and trustee, had a program and luncheon in his honor October 19.

The University of Texas Medical Branch has recently received a number of gifts, according to the Galveston *News*, among them $1,800 from Anheuser-Busch, Inc., St. Louis for support of a fellowship for research in the study of protein nutrition in surgical cases; $150 from the Screwman's Benevolent Association, Galveston, for cancer research; and $75 from the Galveston Branch of the American Association of University as the first of three annual donations to cover tuition of one student in the John Sealy College of Nursing.

Dr. George R. Herrmann, professor of medicine at the Medical Branch, was guest teacher at the continuation courses in medicine of the University of California Medical School, San Francisco, October 3-5, and at the University of California at Los Angeles Medical School postgraduate courses in medicine and cardiology. He also lectured at hospitals in Sawtelle and Van Nuys during his trip.

Dr. Truman G. Blocker, Jr., professor of surgery at the Medical Branch, participated in a panel discussion on the surgical specialties at the meeting of the American College of Surgeons in Los Angeles in October.

PERSONALS

Dr. Charles H. Harris, Fort Worth, was honored by Texas Christian University at its seventy-fifth anniversary convocation September 20 with the award of an honorary doctor of laws degree, reports the Albany *News*.

Dr. C. J. Koerth, since August 1 director of the San Antonio tuberculosis control division, has been appointed hospital administrator for the Gonzales Warm Springs Foundation, according to the San Antonio *Light*.

Dr. T. S. Edwards, Knox City, was honored October 17 when a new wing of the Knox County Hospital which has been named for him was formally opened and dedicated, states the Fort Worth *Star-Telegram*. Dr. Edwards was instrumental in establishing the hospital and has served continuously as chief of its surgical staff.

Dr. A. J. Cox, retired Ennis physician who now resides at the Masonic Home, Arlington, was awarded a fifty-year-member emblem and life membership in the Ennis Masonic Lodge on October 13, according to the Ennis *News*.

Dr. Robert E. Windham, San Angelo eye, ear, nose, and throat specialist and vice-president of the State Medical Association, has retired from practice because of ill health resulting from severe injuries received in an automobile accident about two years ago, informs the San Angelo *Standard*.

BIRTHS

To *Dr. and Mrs. David Bennett,* Orange, a son, September 2.

SOCIETY NEWS

Bastrop County Society

October 7, 1948

(Reported by Charles M. Hoch, Secretary)

Socialized Medicine—G. V. Brindley, Temple.

Members of the Bastrop County Medical Society and their wives were guests of Dr. and Mrs. W. E. Wood and Dr. and Mrs. Joe V. Fleming at a turkey dinner October 7 in the Wood home, Elgin. Sixteen persons were present for the affair, which featured an address by G. V. Brindley, Temple, President-Elect of the State Medical Association. Dr. Brindley pointed out that socialization of medicine has been utilized in other countries as the first phase in bringing about socialization of other industries and professions and that reports from New Zealand and England indicate a deterioration of medical service with considerably greater cost than anticipated.

Mrs. Brindley gave two readings, and J. G. Bryson, Bastrop, recited a poem, as well as commenting on Dr. Brindley's talk. Dr. Fleming brought out the desperate shortage of nurses and suggested a plan to train "vocational nurses" in the essentials of bedside nursing without the necessity of fulfilling the usual requirements of "registered nurses."

Dr. and Mrs. Arthur E. Moon, Temple, were present as guests.

Brazoria County Society

September 30, 1948

(Reported by A. O. McCary, Secretary)

Psychopathologic Conditions of Childhood—Hamilton Ford, Galveston.

Only two members of the Brazoria County Medical Society were absent when the society, the associate dentist members, and wives met September 30 in Angleton. Following dinner, Hamilton Ford, Galveston, discussed psychopathologic conditions of childhood. The women then retired to a separate room for an auxiliary meeting, and the society had a business session.

A resolution was drafted by the society volunteering the help of its members to the county health unit until a director can be secured. Another resolution offered the cooperation of the society to the county health unit in the immunization of indigents and the treatment of venereal diseases in indigents until a director has been obtained. The society voted to recommend to the county commissioners court that Dr. Joe S. Montgomery, Angleton, be appointed county physician.

Cherokee County Society

Penicillin in Local Infections—J. H. Liles, Jacksonville.
Diseases Peculiar to Women—John Travis, Jacksonville.
Round-Table Discussion: Advances in Treatment of Infectious Diseases—T. H. Cobble, Rusk, Leader.

Cherokee County Medical Society met recently in Rusk for the program outlined. The society discussed a plan worked out by the ambulance association with the approval of the society, according to which ambulances would carry additional first aid equipment.

Colorado-Fayette Counties Society

September 28, 1948

(Reported by C. I. Shult, Secretary)

M. D. Anderson Hospital for Cancer Research—R. Lee Clark, Houston.

Following a dinner at which auxiliary members were also present, the Colorado-Fayette Counties Medical Society on September 28 in Eagle Lake

heard a discussion of the M. D. Anderson Hospital for Cancer Research by its director, R. Lee Clark, Houston. Dr. Clark explained the purposes of the hospital and the procedure for admitting patients. He also reported on studies made at the hospital.

Dallam-Hartley-Sherman-Moore Counties Society

October 5, 1948

Peptic Ulcers (motion picture)—Courtesy of John Wyeth and Sons, Philadelphia.

Dallam-Hartley-Sherman-Moore Counties Medical Society met in Dumas on October 5 with ten members present. The physicians had dinner and viewed the motion picture named. W. J. Mencarow, Dalhart, was elected to membership.

Dallas County Society

September 23, 1948

(Reported by W. W. Fowler, Secretary)

Diabetes Mellitus—Informal discussion opened by Arthur Grollman, Dallas, and closed by E. P. Joslin, Boston.

E. P. Joslin, Boston, guest of the Dallas Southern Clinical Society, participated in an informal discussion and question and answer period on diabetes mellitus held by Dallas County Medical Society on September 23. The discussion was opened by Arthur Grollman, Dallas.

Hanes M. Fowler was elected to membership upon application; James T. Downs III upon transfer from Galveston County.

Denton County Society

October 7, 1948

The importance of a tuberculosis ward in the new Flow Memorial Hospital was discussed by members of Denton County Medical Society in Denton on October 7, with David Thomas, vice-president, presiding. The society voted to ask the hospital building committee to include room for Denton County's tuberculous patients. The society accepted an invitation of the local tuberculosis association to be honor guests at a dinner October 25 for directors, seal sale chairmen, and office staff.

P. M. Girard, Dallas, was guest speaker.

El Paso County Society

September 21, 1948

Cancer of the Lung—Robert Shaw, Southwestern Medical College, Dallas.

The regular meeting of El Paso County Medical Society was moved forward one week to September 21 so that members could hear a talk by Robert Shaw, professor of thoracic surgery at Southwestern Medical College, Dallas, who was in El Paso to participate in an informal discussion and case presentation of lung tumors for the El Paso Tumor Clinic that day. Dr. Shaw addressed the medical society on cancer of the lung.

Grayson County Society

October 12, 1948

(Reported by Robert W. Duncan, Secretary)

Diagnosis and Treatment of Anemias—Richard A. Dathe, Dallas.

Twenty-two members and guests of Grayson County Medical Society met October 12 in Denison. Richard A. Dathe, Dallas, discussed the anemias.

The society approved a one day pediatric clinic for exceptional children to be held in the county by the State Health Department.

Jefferson County Society

October 11, 1948

(Reported by E. Mittendorf, Executive Secretary)

Advances Made in Surgery Since Advent of World War II—Charles B. Odom, Associate Professor of Surgery, Louisiana State University Medical School, New Orleans.

Unipolar Leads in Electrocardiography—B. B. Elster, Port Arthur.

Jefferson County Medical Society, meeting October 11 in Port Arthur, heard a talk on advances in surgery since the beginning of World War II by Charles B. Odom, New Orleans, formerly personal physician to General George S. Patton, and another by a member of the society.

T. B. Sappington, Jr., Port Arthur, was elected to membership upon application, and Sidney Miller, David W. Quick, Jr., and George G. Dill, all of Beaumont; Frank B. Boyle, Port Arthur; and Orville J. Richardson, Groves, upon transfer.

An amendment to the by-laws, providing for an increase in dues from $36 to $50 to take care of the increase of $15 in State Medical Association dues, was presented and will receive final action at the annual meeting December 13. Dwight E. Curry and Dan H. Byram, Port Arthur, were appointed to make arrangements for the annual meeting, which will be held in Port Arthur.

The committee on economics made a preliminary report indicating that a long range plan for an aid fund would be submitted at an early date.

Announcement was made by L. C. Powell, Beaumont, that arrangements had been completed for a meeting in Beaumont on November 8 to which members of all societies in District 10 would be invited. G. V. Brindley, Temple, President-Elect of the State Medical Association, and representatives from the Council on Medical Defense and the Committee on Public Relations of the State Association will speak.

Lamar County Society

October 7, 1948

(Reported by Thomas E. Hunt, Jr., Secretary)

Influence of Fear on the Body—T. W. Buford, Pattonville.

Fifteen members and one guest were present for the October 7 dinner meeting of Lamar County Medical Society in Paris. The program consisted of a discussion of the influence of fear on the body, presented by T. W. Buford. Dr. Buford pointed out that thought can produce organic disease and can intensify a diseased condition already present. He admitted that there are normal fears, but said that exaggerated fears are harmful. He suggested that old people should not be frightened unnecessarily. The fear of being unsuccessful in their work is common among young doctors beginning to practice, Dr. Buford said, and such fear should be treated to avoid peptic ulcers and similar conditions.

Society members failed to approve an offer from the State Health Department to carry out a mass blood testing survey in the county.

James C. Strong discussed a communication from C. J. Koerth, San Antonio, member of the Committee on Tuberculosis of the State Medical Association, requesting that each county medical society endorse a routine chest roentgenogram of each patient admitted to a hospital.

Tarrant County Society

October 5, 1948

(Reported by W. P. Higgins, Jr., Secretary)

Retrolental Fibroplasia—C. Keith Barnes, Fort Worth.
Discussion—A. E. Jackson and C. R. Lees, Fort Worth.

Irritable Colon Syndrome—Frank Bynum, Fort Worth.
Discussion—Ivan H. Readinger, Fort Worth.

Treatment of Varicose Veins (motion picture)—Courtesy of G. D. Searle Co.

The program outlined was presented when sixty-three members and two visitors of Tarrant County Medical Society met October 5 in Fort Worth.

C. W. Braselton, Jr., R. B. Holst, J. B. Johnson, and H. H. Womack, Jr., were elected to membership upon application; Dolphus E. Compere and Edgar W. Spackman upon transfer.

John J. Andujar moved that "a committee of three be appointed to investigate the feasibility of uniform automobile identification for physicians and to report back at some future meeting." The motion was seconded by Mal Rumph and carried. The president appointed the committee with Dr.

Andujar as chairman and Bert Ball and Dr. Rumph as members.

October 19, 1948

(Reported by W. P. Higgins, Jr., Secretary)

Addison's Disease—W. N. Jenkin, Fort Worth.
Discussion—E. L. Etier, Jr., James K. Norman, and Robert H. Mitchell, Fort Worth.
Placenta Previa—R. J. Rimmer, Fort Worth.
Discussion—G. V. Morton, Fort Worth.

Tarrant County Medical Society met October 19 in Fort Worth with sixty-nine members and four visitors present. The program outlined was presented.

C. Zeno Holt and J. C. Abell, Jr., were elected to membership upon application and D. O. D. Ware was accepted upon transfer from the Clay-Montague-Wise Counties Medical Society.

The secretary, W. P. Higgins, Jr., stated that it had been suggested that E. P. Hall, Sr., who is no longer in active practice and is one of the two surviving charter members of the society, be nominated for honorary membership. Dr. Higgins moved that Dr. Hall be elected to honorary membership. The motion was seconded by Sim Hulsey and carried.

The president reported that an organization is attempting to sell signs bearing statements against socialized medicine. He said that the purchase of such signs is strictly an individual affair.

J. W. Eschenbrenner invited members of the society to attend the November meeting of the Eye, Ear, Nose, and Throat Society, at which L. A. Watson, president of the Maico Company, Minneapolis, will speak on "Audiometry and Deafness."

A proposed amendment to the by-laws of the society was read preliminary to action at the next meeting. The amendment provided that "annual membership dues shall be $50 for each member maintaining an office in Fort Worth, and $43 for each member maintaining an office outside the city limits. Annual dues for intern members shall be $4. Annual dues for junior members shall be $43."

Tom Green-Eight County Society

September 7, 1948

(Reported by C. A. Kunath, Secretary)

A business meeting was held by Tom Green-Eight County Medical Society in San Angelo on September 7, with thirty-seven members in attendance.

Several physicians participated in a discussion of the proposal that physicians of the county assist in the care of military personnel at Goodfellow Field on a part-time civil service basis. The discussion centered around the question of whether remuneration for such services should be on an hourly or a fee basis. It was decided to request a medical officer to present the problem at a future meeting of the society so that action by the members as a whole might be taken.

The secretary reported a balance of $772 in the bank but enumerated several rather heavy expenditures anticipated for the near future. He also reported that contributions to the Texas Physicians Committee to date total $795.

Victor Schulze, chairman of the committee in charge, distributed a revision of the constitution and by-laws for members of the society to study. He requested that suggested changes be submitted to the committee in writing, so that modifications in line with those suggestions might be incorporated in the version to be presented at the next meeting for discussion and action.

Floyd T. McIntire, chairman of the hospital committee, reported slow progress on the plan for building an addition to St. John's Hospital. He said that medical members of the building committee were attempting to revive interest in the project among various civic organizations.

James N. White, chairman of the cancer committee, reported on activities of the Cancer Information Bureau, established in the court house with a full-time advisor in charge.

F. Leon Hutchins and Richard E. Elvins reported on work of the board of health. Dr. Elvins announced that the State Health Department wishes to carry on a chest survey with portable x-ray units next year, similar to the survey done this year. He promised to supervise personally the publicity given to such a survey so that it would be in keeping with the wishes of the society. On this basis, George L. Nesrsta moved that the society approve the project. The motion was seconded by Perry J. C. Byars and carried.

R. E. Windham reviewed the work of the special committee on the coming presidential campaign. A brochure urging the support of Thomas E. Dewey had been prepared and mailed to each county medical societv in the state and to other allied organizations.

Gordon F. Madding pointed out that the public relations committee had a number of items to suggest to the society and that the committee would like to devote an entire meeting in the near future to public relations problems.

H. M. Anderson made announcements concerning the coming meeting of the Texas Tuberculosis Association to be held in San Angelo, and invited members of the society to attend the sessions.

Webb-Zapata-Jim Hogg Counties Society

October 5, 1948

(Reported by M. Valls, Secretary)

Members of the Webb-Zapata-Jim Hogg Counties Medical Society met October 5 in Laredo with the secretary, M. Valls, presiding. An informal discussion of local matters was held, including the announcement that two weekly indigent x-ray clinics instead of one would be held by the Laredo-Webb County Health Unit.

Albert C. King was accepted as a member on transfer from Bexar County Medical Society and James Reitman on transfer from the Alexandria, Virginia, Medical Society.

Third District Medical Society

October 5-6, 1948

(Reported by Kenneth R. Flamm, Secretary)

October 5

MEDICAL SECTION

R. C. Douglas, Lubbock, Chairman

Cardiac Arrhythmia—David Marcley, Amarilo.
Discussion—William H. Gordon, Lubbock.
Management of Arthritic Patient—Ben R. Buford, Dallas.
Discussion—Sam Arnett, Lubbock.
Anemias in Childhood—R. D. Johnson, Ochsner Clinic and Tulane University School of Medicine, New Orleans.
Discussion—Arthur Jenkins, Lubbock.
Texas Cancer Control Progress—R. Lee Clark, M. D. Anderson Hospital for Cancer Research, Houston.
Discussion—A. G. Barsh, Lubbock.
Lupus Erythematosus—J. H. Lamb, Oklahoma City.
Discussion—Chris Mansell, Lubbock.
Convulsive Disorders—M. L. Towler, University of Texas School of Medicine, Galveston.
Discussion—R. C. Sloan, Lubbock.
Recent Advances in Treatment of Leukemic Disorders in Childhood—R. D. Johnson, New Orleans.
Discussion—M. H. Benson, Lubbock.

EYE, EAR, NOSE, AND THROAT SECTION

P. W. Malone, Big Spring, Chairman

New Orbital Implants—Weldon O. Murphy, Amarillo.
Discussion—George H. Wood, Jr., Big Spring.
Laryngeal Obstruction—George S. McReynolds, University of Texas School of Medicine, Galveston.
Discussion—James T. Hall, Lubbock.
Tuberous Sclerosis—Paul W. Miles, Department of Ophthalmology, Washington University, St. Louis.
Discussion—C. E. High, Pampa.
Some Common Problems of the Nasopharynx and Their Treatment—P. W. Malone, Big Spring.
Discussion—Frank B. Duncan, Amarillo.
Recent Trends in Ophthalmology—Paul W. Miles, St. Louis.
Discussion—Ben B. Hutchinson, Lubbock.

Obstructive Lesions of Esophagus—George S. McReynolds, Galveston.
Discussion—Ralph B. Payne, Amarillo.

October 6

OBSTETRICS AND GYNECOLOGY SECTION

Olan Key, Lubbock, Chairman

Breech Presentation and Delivery—Orville N. Hooker, Amarillo.
Discussion—Allen T. Stewart, Lubbock.
Nutrition of Expectant Mother and Expectant Newborn—William F. Guerriero, Southwestern Medical College, Dallas.
Discussion—Clarence Mast, Lubbock.
Revised Prenatal Information and Instruction—Herman L. Gardner, Baylor University College of Medicine, Houston.
Discussion—M. M. Ewing, Lubbock.
Relation of Diseases of Female Reproductive Organs to Lower Bowel—Robert J. Rowe, Southwestern Medical College, Dallas.
Discussion—Joe Harris, Lubbock.

SURGICAL SECTION

D. D. Cross, Lubbock, Chairman

Some Prime Considerations in Procedure of Gastric Resection—Samuel D. Weaver.
Discussion—A. B. Goldston, Amarillo.
Pelvic Pain—William F. Guerriero, Southwestern Medical College, Dallas.
Discussion—E. L. Dye, Plainview.
Continued Mistakes in Gynecology—Herman L. Gardner, Baylor University College of Medicine, Houston.
Discussion—J. H. Morris, Lubbock.
Management of Obstructive Lesions of Colon and Rectum—Robert J. Rowe, Southwestern Medical College, Dallas.
Discussion—John Hogan, Big Spring.

The Third District Medical Society met in a two day scientific meeting in Lubbock, October 5-6. The program outlined above was presented for 130 physicians.

Members of the district auxiliary joined the medical societies for luncheon on October 5 and for a dinner and dance that evening.

The next meeting of the Third District Society will be held in Amarillo, April 12-13.

Fourth District Society

October 12, 1948

The Fourth District Medical Society met in Ballinger on October 12 for the following program:

Invocation—Rev. Lawrence Gilbert, Pastor, First Presbyterian Church, Ballinger.
Address of Welcome—E. C. Grindstaff, County Judge, Runnels County.
Early Diagnosis of Pulmonary Tuberculosis—H. M. Anderson, San Angelo.
Discussion—O. H. Chandler, Ballinger.
Postoperative Adhesions, Causes, Preventions, and Treatment—Gordon Madding, San Angelo.
Discussion—Asher McComb, San Antonio.
Diagnostic Problems, Upper Gastro-Intestinal Bleeding with Illustrative Cases—F. M. Spencer, San Angelo.
Discussion—Joe Kopecky, San Antonio.
Medical Defense and the Damage Suit Industry—L. B. Jackson, San Antonio.
Luncheon.
This Is Your Heart, Doctor—Joe Kopecky, San Antonio.
Intestinal Obstruction—Asher McComb, San Antonio.
Recent Advances in Treatment of Heart Disease—Joe Kopecky, San Antonio.
Surgical Aspects of Peptic Ulcer—Asher McComb, San Antonio.
Business Meeting.

In the evening a banquet for members of the society and ladies was held with Tate Miller, Dallas, President of the State Medical Association, as speaker.

The next meeting of the society will be held in San Angelo in October, 1949.

Eleventh District Society

October 22, 1948

(Reported by C. B. Young, Secretary)

Acute Abdomen—Paul B. Stokes, Crockett.
Discussion—E. H. Caldwell, Tyler, and L. L. Travis, Jacksonville.
Furunculosis—J. H. Lyles, Jacksonville.
Discussion—Fred Felder, Palestine, and Paul Rockwell, Athens.
Saddle Block Anesthesia in Obstetrics—R. H. Looney, Henderson.
Discussion—C. E. Willingham, Tyler, and R. Q. Hunter, Palestine.
Management of Sudden Arterial Occlusions—Ben Wilson, Tyler.
Discussion—Harold Roosth, Tyler, and George Hilliard, Jacksonville.
Luncheon: Address—Carl Moyer, Southwestern Medical College, Dallas.
Business Meeting
Juvenile Diabetes—Jabez Galt, Dallas.
Discussion—J. W. Birdwell, Tyler, and J. M. Travis, Jacksonville.
Water Balance—Carl Moyer, Dallas.

Approximately fifty physicians attended the autumn meeting of the Eleventh District Medical Society, held October 22, in Tyler. The scientific program outlined was presented.

Carl Moyer, Dallas, was guest speaker for the luncheon, which was held jointly with the Woman's Auxiliary and the Tyler Kiwanis Club.

During a business meeting T. M. Jarmon, Tyler, member of the Council on Medical Defense of the State Medical Association, spoke on medical defense, and officers were elected. Lynn Hilburn, Henderson, was named president; E. G. Faber, Tyler, vice-president; C. B. Young, Tyler, secretary-treasurer; and Harvey Bell, Palestine; John Dean, Crockett; and Paul A. Rockwell, Athens, directors.

AUXILIARY NOTES

Officers of the Woman's Auxiliary to the State Medical Association of Texas: President, Mrs. S. M. Hill, Dallas; President-Elect, Mrs. Joseph B. Foster, Houston; First Vice-President (Organization), Mrs. O. W. Robinson, Paris; Second Vice-President (Physical Examination), Mrs. Robert F. Thompson, El Paso; Third Vice-President (Hygeia), Mrs. J. C. Terrell, Stephenville; Fourth Vice-President (Program), Mrs. Edward W. Coyle, San Antonio; Corresponding Secretary, Mrs. Cecil O. Patterson, Dallas; Recording Secretary, Mrs. R. E. Clark, Memphis; Treasurer, Mrs. V. M. Longmire, Temple; Publicity Secretary, Mrs. H. S. Renshaw, Fort Worth; Parliamentarian, Mrs. J. C. Sharp, Corpus Christi.

AUXILIARY NEWS

Bexar County Auxiliary met for luncheon in San Antonio on October 8 with Mrs. Samuel M. Hill, Dallas, President of the State Auxiliary, and Dr. C. B. Alexander, San Antonio, president of Bexar County Medical Society, as speakers. Mrs. Hill discussed the State Auxiliary program, and Dr. Alexander spoke on "Child Development and the Grid Technique."

Mrs. B. H. Passmore, president of the Bexar County Auxiliary, presided over the meeting, which also honored Mrs. Frank N. Haggard, San Antonio, who had recently been made an honorary life member of the National Auxiliary board. Out-of-town guests who hold State Auxiliary positions other than Mrs. Hill were Mesdames A. B. Pumphrey, Fort Worth, legislative chairman; S. F. Harrington, Dallas, school of instruction chairman; W. R. Thompson, Fort Worth, special advisor; W. Frank Armstrong, Fort Worth, chairman of postwar planning; and L. L. Keyser, Fredericksburg, Fifth District councilwoman.

Mrs. Roy C. Giles introduced ten new members.

The new members were honored with a barbecue supper October 12 given jointly for the auxiliary and the medical society. Mrs. Herbert Hill was social chairman and Mrs. Brad Oxford was chairman for the party. Assisting were Mesdames B. E. Fischer, chairman of decorations, and John Marvin Smith, Jr., chairman of refreshments.—Mrs. C. C. Shotts.

Cass-Marion Counties Auxiliary met jointly with the medical society for a chicken barbecue supper in the garden of the home of Dr. and Mrs. Ernest Grumbles, Atlanta, on September 15, with Atlanta physicians as hosts. Twenty-four were present for the meal, following which the auxiliary met in the home of Mrs. Grumbles to hear reports from State Auxiliary officers which were read.

Cherokee County Auxiliary held its first fall meeting in Rusk on September 28 with Mesdames C. M. Pearce and G. C. Lovelace as hostesses. Mrs. George

Hilliard, president, presided at a business meeting held following dinner. Mrs. Kay B. Urban, an auxiliary member, was presented by Mrs. L. L. Travis, program chairman, in a program of original verse.

Dallas County Auxiliary had an executive board meeting October 5 in the home of Mrs. Marvin P. Knight, Dallas. The membership chairman, Mrs. Charles N. LaDue, reported the election of nine new members. Mrs. Ben E. Harrison, volunteer placement chairman, announced that forty-four hours had been given at the Health Museum and in distributing poliomyelitis folders. Mrs. Eugene L. Aten, parentcraft chairman, reported that nineteen fathers and mothers had completed a course in parentcraft. Mrs. W. B. Carrell said that four boxes had been sent to externs in Europe.

The first of the series of lectures of the Southwestern Medical Lectureship, for which Mrs. S. F. Harrington is chairman, was announced for October 25, with Dr. Eugene A. Stead, Jr., professor of medicine at Duke University, Durham, N. C., as speaker on "The Effects of Anxiety on the Circulation."

A contribution of $50 to the Community Chest was authorized.

Members of the Dallas County Auxiliary gave $365 for Woodlawn Hospital, the philanthropic project for the month, at a silver shower October 6 held in connection with a morning coffee at the home of Mrs. Speight Jenkins, Dallas, honoring Mrs. G. F. Goff, president of the auxiliary. Greeting guests at the door were Mesdames Oscar M. Marchman and John M. Pace. Mesdames Jenkins; Goff; Gordon B. McFarland, the president-elect; Samuel M. Hill, State President; and Edward H. Cary, honorary life member, were in the receiving line.

In charge of the large silver bowl for gifts to the hospital were Mesdames F. E. Gessner, Ramsay H. Moore, and W. B. Carrell.

Assisting with serving were Mesdames H. Leslie Moore, Robert E. Winn, Robert S. Sparkman, Charles H. Warren, William F. Mengert Everett C. Fox, Earl L. Loftis, J. M. Pickard, U. P. Hackney, and Harry B. Sowers. Members of the executive board were in the house party.—Mrs. Harry B. Sowers Publicity Chairman.

Ector-Midland-Martin-Howard-Andrews-Glasscock Counties Auxiliary has lost a member in the death on October 9, 1948, of *Mrs. Carl J. Uthoff*, Big Spring. Mrs. Uthoff was vice-president of the Altar and Rosary Society of St. Thomas Catholic Church and secretary of the American Legion Auxiliary at Big Spring. She collaborated with her husband in writing many of the medical papers he has had published. She is survived by her husband, Dr. Uthoff; two sons, Tony Edward and Carl J., II; and two daughters, Peggy Jo and Kathyleen Lorraine.

Galveston County Auxiliary held its first meeting of the year at a luncheon October 19 in Galveston at which newcomers were welcomed. Arrangements for the luncheon were made by Mrs. Dick P. Wall and Mrs. William C. Levin, and Mrs. Charles Lankford was in charge of decorations.

Mrs. Martin L. Towler, who was named president-elect last March, is serving as president, replacing Mrs. Erle E. Wilkinson, who moved from Galveston. Mrs. Paul B. de Mesquita has been made president-elect and is also serving as treasurer, to which office she was elected last spring.—Mrs. Martin L. Towler, President.

Harris County Auxiliary officers entertained with a tea September 27 at the home of Mrs. Charles B. Sanders, Houston. A business meeting was also held. Approximately 250 members were present for this first meeting of the year, for which Mrs. Lyle J. Logue was chairman. Mesdames Carlos R. Hamilton, Paul W. Best, Burt B. Smith, Thomas J. Vanzant, J. Griffin Heard, Thomas L. Royce, Harvey L. Kincaid and George W. Waldron, assisted Mrs. Logue and Mrs. Sanders as hostesses.

A news letter distributed by the Harris County Auxiliary to its members reports that the members have assisted the Junior Chamber of Commerce in selling tickets to a football game, the proceeds of which went to the poliomyelitis fund, and have contributed $166.86 to the Autrey Memorial School. A $300 fund set up by the auxiliary two years ago to assist a nursing student has been made available to a student at Herrmann Hospital.—Mrs. Thomas L. Royce, Publicity Secretary.

Kerr-Kendall-Gillespie-Bandera Counties Auxiliary met for luncheon at the home of Mrs. S. E. Thompson, Kerrville, on October 7, with Mrs. Samuel M. Hill, Dallas, State President, and Mrs. Charles Livingston, Legion county president, as honorees. Mrs. Livingston presided and twenty-six members, ten of whom were new, were present. Also present were the following state officers: Mesdames W. R. Thompson, Fort Worth, special advisor; Frank Armstrong, Fort Worth, postwar planning chairman; A. B. Pumphrey, Fort Worth, legislative chairman; S. F. Harrington, Dallas, school of instruction chairman.

The flowers for the luncheon were presented in honor of Mrs. H. H. Gallatin, the auxiliary's first president.

Dr. S. E. Thompson spoke to the auxiliary of the Gonzales Warm Springs Foundation and urged support of it. Mrs. Hill and the other state officers talked of the auxiliary program and projects.—Mrs. D. E. Packard, Secretary.

Liberty-Chambers Counties Auxiliary held a business meeting October 14 at the home of Mrs. E. R. Richter, Dayton. Ten members were present.

Orange County Auxiliary held a recent meeting at the home of Mrs. G. Y. Swickard, Orange, with fourteen present. Mrs. C. B. Shaddock, president, conducted the business session.—Mrs. M. E. White.

Smith County Auxiliary met recently at the home of Mrs. Leland R. Rhine, Tyler, with Mesdames Masters H. Moore and R. E. G. Baldwin as cohostesses. Twenty-three members and one guest were in attendance for the business meeting and the coffee hours which followed.

The auxiliary endorsed the plan proposed last year to finance the furnishing of a room in the new city hospital and accepted that plan as its project for the year.

Mrs. Howard Bryant, president, presided at the silver service, and Mrs. Lawrence Neill assisted in the dining room when refreshments were served. —Mrs. Irvin Pope, Jr.

Tarrant County Auxiliary for its first meeting of the season held a luncheon in Fort Worth on October 8 honoring the president, Mrs. J. Franklin Campbell. Dr. Edgar S. Ezell, who was introduced by Mrs. Burgess Sealy, program director for the day, spoke on "Recent Trends in Psychiatry."—Mrs. H. S. Renshaw.

DEATHS*

Dr. Arthur Scott Bronson, San Antonio, Texas, died September 25, 1948, of heart disease.

Born January 1, 1879 in Metropolis, Ill., the son of Dr. Joseph Edward and Mary Minerva (Scott) Bronson, Dr. Bronson received his early education

*An obituary ordinarily will not be published more than four months after date of death. Cooperation in reporting deaths of physicians and in furnishing appropriate biographical material promptly is solicited.

in Illinois. He was graduated from Park College, Missouri, and from the Homeopathic Medical College of Missouri, St. Louis, in 1901. From his graduation until 1907 he engaged in general practice in the Cherokee section of Oklahoma. He then moved to Albuquerque, N. Mex., to practice with his father until 1912, when he went to El Paso, limiting his practice to eye, ear, nose, and throat. He spent seven months in Chicago in 1923, taking training in his specialty, and returned to San Antonio, where he was active until his death. He was on the staffs of Robert B. Green, Santa Rosa, and Medical and Surgical Hospitals.

Throughout his professional career in Texas Dr. Bronson was a member of the State Medical Association and American Medical Association, first through El Paso County Medical Society and then through Bexar County Medical Society. He was a diplomate of the American Board of Otolaryngology, a charter member and past president of the San Antonio Eye, Ear, Nose, and Throat Society, and a member of the Pan American Medical Association. He was a member of the Madison Square Presbyterian Church, serving as elder and director, and was a member of the Masonic Order. Dr. Bronson devised many ingenious methods and instruments in the field of his specialty.

Surviving Dr. Bronson are his wife, the former Miss Sarah Ellen Salter of Kirkwood, Ill., whom he married July 29, 1908, in Albuquerque; a daughter, Mrs. A. Robert Nowlin, San Antonio; a son, the Rev. Joseph E. Bronson, Columbus, Ohio; one sister, Mrs. Julia Ehlers, Kingman, Ariz.; and two brothers, Gilbert E. Bronson, Richmond, Calif., and Frank E. Bronson, Fresno, Calif.

Dr. Matthew Elmer Campbell, Abilene, Texas, died October 15, 1948, of hardening of the arteries.

The son of Alexander and Caroline (Griffin) Campbell, Dr. Campbell was born October 24, 1868, at Greenfield, Mo. He came to Texas, however, when he was 17 years old. While working in a drug store several years later, he decided to become a doctor of

DR. M. E. CAMPBELL

medicine and in 1899 was graduated from Barnes Medical College, St. Louis. Dr. Campbell did general practice in a number of towns in Texas, including Copeville, Pyron, Sterling City, Stanton, Big Spring, and Bonham, until 1918, when he spent a year in postgraduate study at Tulane University, New Orleans, and returned to Abilene to specialize in eye, ear, nose, and throat. During the early months of World War II, Dr. Campbell served as medical examiner for Selective Service. In November, 1942, he collapsed from overwork and never fully recovered.

Throughout his professional career Dr. Campbell was a member of the State Medical Association and American Medical Association. He was a member of Ector-Midland-Martin-Howard-Andrews-Glasscock Counties Medical Society, then Fannin County Medical Society, and more recently Taylor-Jones Counties Medical Society. In 1946 he was elected to honorary membership in the State Medical Association. He was a member of the Baptist Church and a student of the Bible.

Dr. Campbell married Miss Melvia Poteet at Copeville on June 12, 1889. He is survived by his wife and one daughter, Mrs. Elta Campbell Roberts, Abilene. A son, James Percy Campbell, died in infancy and a daughter, Miss Willie Beatrice Campbell, died in 1934.

Dr. David Wesley Clark died October 5, 1948, at his home in Vega, Texas, of apoplexy.

Dr. Clark was born October 29, 1868, in Gallatin, Tenn., the son of Charles and Martha (Brown) Clark. He was graduated from the Medical Department of Vanderbilt University, Nashville, in 1892, and served an internship at the New Orleans Polyclinic and a residency at Baylor Hospital, Dallas. Dr. Clark practiced for four years near Gallatin before coming to Texas. He had practiced in Montague for twenty-two years, at Iowa Park for four years, in Farwell for thirteen years, and at Vega for ten years. He served twelve years each as health officer of Montague County and Oldham County. He retired four years ago because of ill health.

Dr. Clark was a member throughout most of his professional career of the State Medical Association and the American Medical Association. He was a member first through Montague County Medical Society, then through Wichita County Medical Society, and more recently through Randall-Deaf Smith-Parmer-Castro-Oldham Counties Medical Society, of which he was president in 1939. He had been secretary of the Montague County Society. Dr. Clark was elected to honorary membership in the State Medical Association in 1939. He was chairman of the local infantile paralysis organization at the time of his death. He was a member of the Methodist Church, having been a steward for fifty-five years. He was also a member of the Masonic Lodge.

Surviving Dr. Clark are his wife, the former Miss Anna Covey, whom he married October 24, 1906, in Montague, and one brother, Fulton B. Clark, Birmingham, Ala.

Dr. Eugene Vernon Powell, Sr., Waco, Texas, died of coronary occlusion October 18, 1948.

Dr. Powell, the son of William and Mary (Riodan) Powell, was born August 2, 1891, in Galveston, Texas. He attended the public schools in Temple and Cleburne, and was graduated from the Cleburne High School in 1908. His medical education was obtained at the University of Texas School of Medicine, Galveston, from which he was graduated in 1914. He also attended the Army Medical School and Cornell University, specializing in radiology. Dr. Powell served a year's internship at John Sealy Hospital, Galveston, and a residency at the Rockefeller Institute from 1920 to 1923. He was associated with the radiology departments at Mt. Sinai Hospital, New York, from 1921 to 1927; King's Daughters Hospital, Temple, from 1927 to 1939; the

Terrell Clinic, Fort Worth, from 1939 to 1942; Hillcrest and Providence Hospitals, Waco, from 1942 to 1946; and Veterans Hospital, Waco, from 1946 until the time of his death.

From 1915 through 1917 and again from 1927 until his death Dr. Powell was a member of the State Medical Association and the American Medical Association. He was a member successively of Harris, Dallas, Bell, Tarrant, and McLennan Counties Medical Societies. At the time of his death he

DR. EUGENE V. POWELL

was a member of the Twelfth District Medical Society. In 1930 he was secretary and in 1936 chairman of the Section on Radiology and Physiotherapy of the State Medical Association. He was president of the Bell County Medical Society in 1935. He was a member of the American Roentgen Ray Society, Radiological Society of North America, American College of Radiology, and Texas Radiological Society. He was a charter member of the American Roentgen Ray Society and the Texas Radiological Society, and served a term as president of the latter organization. He was a diplomate of the American Board of Radiology. He had also been a member of the Inter-City (Fort Worth and Dallas) Radiological Society; the New York Roentgen Society of which he had been secretary and vice-president; and the New York Gastroenterological Society. He was also a member of Phi Beta Pi.

Dr. Powell was one of the first physicians to practice radiology in Texas. He received acclaim in the 1930's for his use of roentgen therapy of pneumonia and he contributed much to the study of cancer.

On April 2, 1920, in New York, Dr. Powell married Miss Constance von Bieberstein, who died in 1945. He is survived by a second wife, the former Miss Doris Daniel, whom he married August 31, 1946, in Temple; two sons, Dr. E. V. Powell, Jr., Jackson, Miss., and Egan C. Powell, Cleveland; one daughter, Mrs. David A. Rich, Rochester, N. Y.; and one brother, Claude H. Powell, Millington, Tenn.

Dr. John William McMahan, who practiced medicine in San Antonio, Texas, for approximately a quarter of a century, died September 17, 1948, in Escondido, Calif., where he had moved two years ago upon his retirement.

A native of Rochester, Ind., Dr. McMahan was born in 1870. He attended high school in Rochester and was graduated in pharmacy at Purdue University, LaFayette. His medical degree was obtained from the Central College of Physicians and Surgeons, Indianapolis, in 1897. Dr. McMahan came to San Antonio in 1917 as a member of the resident medical staff of Fort Sam Houston. Following the war he practiced in Bee County and at Junction before returning to San Antonio in 1926 to establish the Prospect Hill Clinic.

Dr. McMahan had been a member of the State Medical Association and American Medical Association through Bee County Medical Society, and at the time of his retirement in 1946 he was a member through Bexar County Medical Society. He was a member of the Elks Club. His hobby was oil painting, and his landscapes of Texas cactus and blue bonnets have hung in numerous exhibits.

Dr. McMahan is survived by his wife and five sons, John McMahan, Econdido; Walter, Richard, and Harry McMahan, Los Angeles; and Edwin McMahan, New Kensington, Pa.

Dr. Joseph Henry Kozar, Somerville, Texas, died August 16, 1948, of coronary thrombosis at the home of his daughter in Smithfield.

The son of Joseph Henry and Anna (Krupicka) Kozar, Dr. Kozar was born September 7, 1869, at Privetice, County of Rokycan, Bohemia, where he received his early education. He emigrated to the United States in 1884 and became a naturalized citizen in 1894. He attended the Cleveland College of Physicians and Surgeons of Western Reserve University, from which he received a doctor of medicine degree in 1897. He remained in Cleveland to practice until 1901, when he moved to Burleson County, Texas, where he was actively engaged in practice in Snook and other small communities until shortly before his death.

A member of the State Medical Association and American Medical Association through Burleson County Medical Society off and on since 1910, Dr. Kozar had been an honorary member of the State Medical Association since 1943. He was a Presbyterian and a Woodman of the World. He was in service with the United States Army from 1889 until 1892.

Dr. Kozar was preceded in death July 2, 1937, by his wife, the former Miss Nellie Grace Hanson, of Cleveland, Ohio, whom he married April 26, 1905, in Somerville, Texas. He is survived by a daughter, Mrs. Harold A. Smith, Smithfield; a son, Leland J. Kozar, Fort Worth; and two grandsons.

Dr. Crawford L. Vines, Kilgore, Texas, died September 16, 1948, from a cerebral hemorrhage.

Dr. Vines was born in Eldorado, Ark., March 5, 1883, the son of the Rev. W. and Terza Vines. His medical education was obtained from Memphis Hospital Medical College, Memphis, Tenn., from which he was graduated in 1910. He served an internship at Charity Hospital, New Orleans, and returned to Arkansas to practice. He was at Crossett from 1913 until 1919, at Pine Bluff from 1919 until 1928, and at Eldorado from 1928 until 1934. He then moved to Kilgore, where he was in practice until the time of his death.

A member of the American Medical Association, Dr. Vines had held continuous membership in the Gregg County Medical Society and State Medical Association of Texas since coming to this state in 1935. He was a member of the Methodist Church and a Mason. He had served as a medical examiner for Selective Service.

Surviving Dr. Vines are his wife, the former Miss Evelyn Cash, whom he married November 3, 1922, in Little Rock, Ark., and one sister, Mrs. Bell Patterson, Eldorado Ark.